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GENERAL NEWS SECTION.....

*Illustrated.

The Interstate Commerce Commission deals with subjects which are highly controversial by their very nature. The way in which a body dealing with such subjects does its work is certain itself to become a subject of controversy; and in the course of such controversy the body in question is sure, at times, to become a target for criticism. Some of the criticism is bound to be just, because every man and every body of men makes mistakes that justify criticism. Some of the criticism is bound to be unjust, because critics are, perhaps, of all people, the most liable to make mistakes. And so, in the natural course

of things, the Interstate Commerce Commission becomes the object of many criticisms, some just and some unjust. When one considers the complexity and magnitude of the work of the commission, especially just after having read a frank, manly and able address like that delivered by Commissioner Clark to the American Association of General Passenger Agents, and published elsewhere in this issue, he is apt to conclude that the commission is nowadays being given somewhat less consideration than it deserves from those who discuss its work, and somewhat too much criticism which is misdirected and unjust. Commissioner Clark evidently had some such thought in mind when he made his address. So far as the *Railway Age Gazette* is concerned, it probably publishes more discussion of the work of the commission than any other publication in the country; and it therefore gives us satisfaction at this particular time to express the most unreserved confidence in the ability, the public spirit and the honesty of purpose of the commission. We do believe that it would be a more useful body if it contained more members with experience in the businesses of the concerns which they regulate; but certainly no man in private or public life has ever worked harder or more faithfully to fit himself to perform his duties according to the highest standards than have the members of the commission, and of no member of it is this more true than of Mr. Clark himself. Criticism of the commission does not necessarily imply lack of confidence in it, as indicated forcibly by the fact that some who criticize it a good deal at the same time advocate giving it universal authority.

There is on almost any railway more or less friction between the minor operating officers and the engine house forces, but it

The Trainmaster and the Engine House

is difficult to find a good reason for it. There is no question that trainmasters, yard masters and despatchers frequently exercise poor judgment and very little tact in their relations with the engine house staff and it is possible that if they were to spend a little time periodically with the engine house foreman, getting better acquainted with him and his problems, they would more fully realize the task which he always has confronting him; a great many tactless moves on the part of the transportation department officers can be directly traced to a lack of knowledge of the main essentials of engine house practice. On the other hand the engine house foreman is prone to a lack of tact in his dealings with the transportation department. He is likely to overlook the fact that locomotives are intended to haul trains and not to stand in the roundhouse undergoing repairs. There are engine house foremen in considerable numbers who have nothing but contempt for the ideas of a trainmaster or despatcher on the terminal handling of locomotives; such men go around with chips on their shoulders awaiting an opportunity to make sarcastic replies to inquiries from the despatcher's office. And in the engine house foreman's defense it must be said that many of these inquiries are calculated to stir up resentment. But in the great run of cases the transportation officer has this in his favor; he realizes that he is there to move traffic and all his efforts are used in that direction. The engine house foreman is probably a man whose training has been almost entirely in the shop and he is likely to find it difficult, unless he be broad minded, to see beyond the engine house conditions and surroundings. When an engine house foreman is appointed one of the points which should be most forcibly brought home to him is that he is there to help in every way possible in the moving of traffic; that he is expected to keep the locomotives in good condition but above all to furnish them quickly when they are required. On the whole what is needed on both sides is a little broader viewpoint of the other fellow's side of the question and the realization by all that their efforts should be all toward one end, the movement of trains.

The New York Railroad Club paper on delays in the handling of packages in Boston freight houses, which is reported in this issue,

**Freight House
Delays at
Boston**

affords an interesting example of careful and scientific study of a subject which seems almost to defy systematic analysis. These investigators, in spite of the obstacles, have made a good beginning. They make no formal and definite recommendations, as they were commissioned only to get the facts, but, so far as wagon delays are concerned, they have plainly suggested the principal remedy—whether they meant to do so or not—and in a single sentence; that the main thing is the teamster. In other words, when you put teams in charge of the most energetic men that can be found, you have met the chief demand of the situation. The theorist can construct a perfect freight terminal, where boxes and barrels will move as smoothly and rapidly as a fifty cent piece moves in the cash carrier of a dry goods store; but in real life a city freight house is a great bunch of costly problems. Such a large share of the obstacles and hindrances are so difficult to deal with by rule or at arm's length, and so peculiarly amenable only to vigorous executive ability on the spot, that the personality of the man at the helm is by far the biggest factor in the whole business. As to the remedy for slow yard movements of inward cars, the investigators give us very little light; but the statement that large numbers of shipments, every day, are ready for the consignees an hour, or two hours, before the clerk is ready to hand them their freight bills, indicates reprehensible slowness on the part of somebody besides the switching crews. In both these features more detailed information is needed. Such dilatory handling of way-bills would come in for pretty severe criticism if it should come up for investigation before those officers of the government who investigated the express companies a year or two ago. Whether or not our present investigators' imposing array of average delays will afford a suitable lever by which to raise the level of efficiency, and to convey lessons to the managers of other freight houses, it is impossible to say; but there can be little doubt that a lot of the *maximum* delays, if suitably studied and explained, would be very instructive. Most freight agents and yardmasters who read this paper will look upon the investigation as having been only just begun.

SOLID IVORY

THE remedy advocated by most of the professional radicals and muckrakers for commercial and industrial ills is either government ownership of numerous industries, including railways, public utilities, coal mines, water power sites, and so on, or out-and-out socialism.

Pearson's Magazine claims the distinction of publishing articles muckraking business and advocating government ownership which are of such a character that no other magazine would publish them. And its claim is valid. It is the only publication in the country which impartially vilifies all classes of business concerns; and it regards socialism, or the practical equivalent of it, as the only avenue to social and economic salvation.

Imagine our astonishment, then, on finding in the current issue of Pearson's an article muckraking the Congressional "pork barrel." The most notorious railway wreckers in the country, the editor asserts in an introductory note to this article, have done nothing worse than the members of Congress who rob the public by habitually voting for such legislation.

Is it not true, after all, then, that the politicians who run the government are vastly superior in ability, honesty and zeal for the public welfare to the malefactors of great wealth who run the railways and other business concerns? Is it possible that our statesmen take advantage even now of such opportunities as they have to use their official positions to further their own selfish ambitions, and the interests of friendly business concerns and communities? The writer in Pearson's so asserts, and cites evidence. And yet, according to Pearson's, virtue can be enthroned and the social and economic welfare of the public promoted only

by adopting government ownership of all kinds of business concerns and turning over their management to the very men or kind of men who are now engaged in frying fat out of the tax-paying public by means of the pork barrel!

Some people think, and some people just think they think. The bones in the heads of those who just think they think have varying degrees of thickness and power of resistance to facts and logic. But for real solid ivory we commend the skulls of those whose investigations and whose thinking that they think lead them at one and the same time to the conclusions (1) that government is dishonest and imbecile, and (2) that it is essential to the public welfare for government to be intrusted with the management of many or all of the business concerns of the country.

THE TRUE FUNCTION OF THE COMMISSION

THE prompt decision of the Interstate Commerce Commission to reopen the eastern rate advance case is gratifying. A majority, not only of students of transportation questions, but of the general public think that its original action in this case was wrong. But regardless of that, everybody recognizes the fact that a great change has taken place in the railway situation since then. The commission said in its opinion that it had found that the earnings of the railways in eastern territory were too small either for their own good or that of the public, and while granting a relatively small increase to the central freight association lines, it recommended the adoption of various means by which it believed that all the lines concerned could increase their net income.

The disturbance to business in the United States, and the consequent reduction in railway traffic, caused by the war in Europe, have led to a heavy reduction in railway earnings, thereby making them still more deficient than they were before. The loss of earnings thus brought about has come suddenly, while the means for increasing net earnings which the commission suggested to the railways could not be applied quickly. The situation is aggravated by the fact that the war has not only reduced railway earnings, but has also increased and will for an indefinite time increase the demands on earnings. Already it has made it practically impossible to market new securities and has caused a sharp advance in the return which must be paid on both new securities and those issued for re-funding purposes.

Furthermore, this increase in the rate of return which must be paid on capital is not a temporary one. Every day the war is causing the destruction of millions of capital. It is thereby tending to reduce the ratio of the supply of capital in the world to the demand for it and thereby to push up the rate of interest. When the war is over there will be an enormous demand in Europe for capital with which to restore to their former condition the industries which are now deteriorating or being rapidly destroyed there, either because of their inability to get labor or hold markets for their products, or by the military operations themselves. It seems probable, therefore, that the rate of interest which will have to be paid on capital for a long time will be much higher than it has been within recent years; and, of course, a high rate of interest makes it necessary to pay proportionately high dividends on stock in order to market it at a reasonable price, for nobody will accept a dividend of 6 per cent on stock with the risks attendant on its ownership if he can get almost an equal rate of interest on bonds, the ownership of which does not involve such risks. If the railways are going to have to pay much higher rates of interest and dividends in the future in order to maintain and market their securities at fair prices, they must have larger earnings.

It is to be hoped that in reopening the case the commission will consider the important matters involved in a somewhat different spirit from what it did before. It complained in its opinion that during the original hearings it was the object of many criticisms because it did not hasten its decision, and the recipient of many letters, resolutions, etc., petitioning it to dis-

pose of the application of the railroads quickly and favorably as a means of improving business in general. It resented these efforts to influence it. It said in one place in its opinion, "The law fixes the standards by which the rates and practices of carriers must be judged, and the commission can act only in accordance with those standards and after a full hearing; we have no authority to approve rate increases with a view to stimulating business." Elsewhere it said, "These questions involved the exercise of quasi-judicial functions, and the law requires us to afford to all parties an ample opportunity to introduce evidence and to be heard in support of their objections to the additional burdens upon their traffic proposed by the carriers. . . . The law did not confer upon us the power of aiding general prosperity or of introducing new economic policies through railroad rates." These statements indicate that the commission was acting according to a somewhat different idea of its functions from that which it had expressed on former occasions. It will be recalled that in one decision it held that it was not necessary for it in deciding a case to confine itself to a consideration of the record made in that case, but that it might also consider facts of which it had special knowledge. The supreme court reversed this ruling. Is it surprising that some people have not looked upon the commission as they do on a court, when the commission itself has expressed such views regarding its functions? Again, the commission in one of its annual reports declared, in the course of a denunciation of the way in which the Commerce Court had been reversing some of its decisions, that in the fixing of rates it performed a legislative function delegated to it by Congress, and that therefore the court could review its decisions only to ascertain whether it had violated any statutory or constitutional provision.

Now, the commission doubtless is justified in resenting efforts to make it decide a case before it has ascertained the facts involved or to make it decide contrary to the facts which it believes it has found to exist. But it would seem that in the utterances referred to in its opinion in the rate advance case, it somewhat too completely forgot that, as it has said on other occasions, it performs legislative as well as judicial functions. It is a judicial function to determine what is a reasonable rate, and doubtless the commission should proceed in the performance of that duty much as a court would. But it has always been held to be a legislative function to fix a rate, and it is a recognized duty of law-making bodies in the performance of their functions to consider not merely questions of law or constitutionality, but questions of public expediency; and Congress in delegating to the commission authority to fix rates has clearly authorized it to consider questions of expediency as well as of law. Congress has authorized and required it to fix not the lowest rates which constitutionally can be fixed, but *maximum* reasonable rates. While, therefore, the commission cannot constitutionally fix rates that are confiscatory, it can consider what is expedient for the public and fix or permit the railways to fix the maximum rates which would be reasonable in the circumstances. Consequently, in saying, "The law did not confer upon us the power of aiding general prosperity," the commission expressed an entirely erroneous view. It is quite proper for a court to take this attitude, but entirely wrong for the commission to do so.

The commission cannot constitutionally fix rates that are confiscatory, but over and over again it has said in its opinions that it is its duty to so adjust rates as to cause enough capital to flow into the railway business to enable the carriers to make adequate improvements in and additions to their property. But what is regulating rates so as to cause an adequate amount of capital to flow into the railway business but so regulating them as to promote the general prosperity?

Since the commission should consider the questions of public expediency involved it follows that while it should not be pelted with petitions and resolutions intended to make it render a decision disregarding the facts, it ought to hear and give heed to individuals and organizations that are in a position to inform

its mind on the broad question of public policy involved. The commission's continued usefulness depends upon it getting out, and keeping out of its head, the notion that it is a court trying law suits. The Commerce Court was merely a court trying law suits; but the Interstate Commerce Commission is an administrative body having at once legislative, judicial and executive functions, and created for the express purpose of performing a function which the courts cannot perform, viz., that of solving a great problem of public policy. It ought to act regardless of public clamor, but on the other hand, it should act for the express purpose of promoting the public interests. If, because of lack of ability or courage, or of an improper conception of its place in the machinery of government, it seeks to hedge itself about with the formalities, technicalities, traditions and precedents of the courts, its days of usefulness will be few in number. It has a great opportunity in passing once more on the eastern rate advance case, to show whether it has a proper conception of its duty and responsibilities and a disposition to live up to them.

TRAVELING ENGINEERS' CONVENTION

GREAT credit is due the members of the Traveling Engineers' Association for the splendid attendance at their recent convention, for the large number present at every session and for the thoroughness with which the subjects were discussed. Nearly 50 per cent of the membership of the association registered. Two sessions a day were held. The morning sessions started before 9:30 o'clock and the afternoon sessions closed some time after five in the afternoon with only about an hour and a half for lunch. It made a long day for men not accustomed to the confining work of a convention, but the interest was intense from first to last, and the discussions, while not always carefully restricted to the subject of the paper, were full of interesting, serviceable information for the members and the railroads they represent.

The point-of-view and the information obtained by the road foreman of engines in the performance of his duties is of great importance to the mechanical department, to the transportation department and to the railroads as a whole. Being on the road a large part of the time he is in a position to observe how the service may be improved and how the real work of a railroad, that is, the transportation of freight and passengers, may be performed in a better and more economical manner. He, therefore, fills an important position, and his suggestions for improvements should be given careful consideration. Likewise, he must realize the importance of his position and take advantage of his opportunities to better the service. In order to do this he must be constantly increasing his knowledge of locomotive design with a view of understanding why certain things must be done to obtain certain results. By thus enlarging his technical knowledge the road foreman of engines with his highly developed practical knowledge will be in a position to effect and recommend improvements that will greatly benefit locomotive operation.

The papers considered this year that were of special value in this respect referred to mechanical stokers, smoke elimination, locomotive air brake equipment and the practical chemistry of combustion. The papers and discussions by the various mechanical experts have provided the association with information that will make its 1914 proceedings a text book worthy of careful study.

NEW BOOKS

Foundations. By Malvert A. Howe, professor of civil engineering, Rose Polytechnic Institute. Size 6 in. by 9 in. 110 pages, 56 illustrations. Bound in cloth. Published by John Wiley & Sons, New York. Price \$1.25.

Howe's "Foundations," is a short text book covering the supporting capacity of soils, wall footings and column footings, piles and pile foundations, chimneys and towers, bridge piers and abutments and methods employed in difficult foundations. The au-

thor has attempted to treat the fundamental principles of design in an elementary fashion and draw the illustrations from actual practice, eliminating most of the descriptive matter and depending on references to previously published descriptions of such work.

Rational Stock Speculation. By Walter Thornton Ray. 86 pages, 15 plates, 10 $\frac{1}{4}$ in. by 6 $\frac{3}{4}$ in. Bound in cloth. Published by the author, Spartanburg, S. C. Price \$2.

This book is intended as a help to putting stock speculation on a more secure basis by furnishing the data for estimating the future in the light of the past. It is based on the theory that the long swings of stock fluctuation are in relation to the variations in fundamental conditions, and that therefore the general course of prices may be estimated in advance by a correlation of the various factors which enter into the causes of such variations and by comparison with the existing records for previous years. The author states that the book is intended as an aid in forecasting long swings of stock prices, that such studies can never replace studies of the prospective and comparative futures of individual stocks and that he does not hesitate to place his investigations in the second rank. The book consists mainly of tables and charts giving the history of New York interest rates, foreign open market interest rates, foreign banks' official discount rates, prices of iron and steel, prices of non-ferrous metals, prices of commodities in general, iron production in the United States, bond transactions on stock exchanges and bond and security prices, volume of stock sales on the New York stock exchange, statements of New York City clearing house banks, bank clearings, building permits, and percentages of return on stocks and bonds. With these are given comments on the importance to be given to the various factors and instructions for interpreting them.

Power and Power Transmission. By E. W. Kerr, M. E., professor of mechanical engineering, Louisiana State University. Third Edition, revised. 373 pages, 6 in. by 9 in., illustrated. Bound in cloth. Published by John Wiley & Sons, Inc., New York. Price \$2.

The first edition of this book was published in 1901 and the second in 1907. It has now been revised and contains 24 more pages of matter and 61 more illustrations than the previous edition. The book is divided into three parts. Part 1, which deals with machinery and mechanics, contains an introductory chapter dealing with definitions, terms, etc., and the other chapters in this section consider such subjects as shafting, bearings, friction and lubrication, friction wheels, pulleys, belt gears, toothed wheels, the screw, cams, the lever and some of its modifications, link work and pipe fittings. Part 2 is devoted to steam power with chapters dealing with elementary steam power plants, the simple steam engine, automatic cut-off engines and high speed engines, indicators, compound engines, condensers, valves and valve gears, valve diagrams and rotary engines and steam turbines. Part 3 is devoted to pumping machinery, internal combustion engines, water power and compressed air.

Railway Fuel Association Proceedings. 342 pages, illustrated, 6 in. by 9 in. Bound in Morocco. Published by the association, C. G. Hall, Secretary, 922 McCormick building, Chicago. Price \$1; paper binding, 50 cents.

This book is the official proceedings of the sixth annual convention of the International Railway Fuel Association held in Chicago, May 18-21, 1914. It contains a very interesting address by Dr. W. F. M. Goss, reports of committees on Fuel Tests, Firing Practice and Fuel Stations. Also papers on Honeycomb and Clinker Formation, The Relation of Front End Design and Air Openings of Grates and Ashpans to Fuel Consumption and Sparks, Uniform Methods of Computing Fuel Consumption, Sizing of Coal for Locomotive Use, Storage of Coal, Morden Locomotive Coaling Station, Reheating Locomotive Boiler Feed Water, Fuel and Failures, and Economies in Roundhouse and Terminal Fuel Consumption. These proceedings contain valuable information on the subjects above mentioned and may be considered authoritative in questions pertaining to fuel economy on railroads.

Letters to the Editor

SIMPLICITY AND DIRECTNESS IN TRAIN DESPATCHING

NASHVILLE, Tenn., August 30, 1914.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

It has always been a puzzle to me why the initials of a superintendent or chief train despatcher should have to be added at the bottom of a train order to make it valid. They do not issue the order, are not aware of its contents, and often are made to appear ridiculous because of this old custom; and it also cheapens their positions. The names of the train despatchers should be printed on time-tables; and then if any initials must be used it should be those of the despatcher who actually gives the order.

This would give the despatchers the standing they ought to have and also make them more careful in their work. It would save all bother in having to search the records to see who authorized a certain order, in case of any exception being taken to it, or when necessary to produce an order as evidence. I hope officers will give this matter careful thought when they next revise their rules. The attention of the Train Rule Committee of the American Railway Association is invited.

H. W. FORMAN.

THE MACHINES IN R O CABIN

CHICAGO, September 14, 1914.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

I have read the article, "Controlled Manual Block for Opposing Movements," in the *Railway Age Gazette* for September 11, page 475, and think I correctly understand the application of the system on the double-track freight line, as described, except as to the use of the eight electric locks shown on the shelf in R O Cabin, Fig. 4. By "putting two and two together"—taking into account the statement on page 478 that an additional section of the block instrument is provided for each additional switch controlled from a given block station—I conclude that one of the electric locks forms the block instrument for the eastward track in which, I assume, R O controls no switch, and that three locks form the block instrument for the westward track in which R O probably controls two switches. Possibly the other four locks serve as levers for operation of the signals.

Is this so?

X. Y. Z.

[We are informed by Mr. Anthony that X. Y. Z.'s understanding is correct.—EDITOR.]

ENGLISH RAILWAYMEN ENLIST.—As might be expected, all of the English railways have lost, for the present at least, large numbers of their employees who have enlisted in the ranks. The Navy and Army Reservists and Territorials who have joined the colors from the Great Western Railway, for instance, number over 4,000. There are 1,775 from the locomotive, 721 from the goods, 617 from the engineering, 566 from the traffic, and 158 from the signal departments. The general manager has announced that the posts hitherto filled by the men will, as far as possible, be kept for them on their return to civil life, and if the identical positions are not available, others will be found. The company will make good at its own expense the men's contributions to the Pension, Society and Widows' and Orphans' Fund, and arrangements will be made to see that the men's respective families do not suffer financially by their absence. The general manager of the Great Central has likewise announced that "Single men who join the colors for the period of the war will be treated as on leave with pay. Their subscriptions to the company's superannuation fund, or the mutual provident association, will be paid by the company in their absence. Scales of pay will continue to advance until their return."

Practical Considerations in Design of Large Stations

Features Which Should Be Studied in Planning a Large Passenger Terminal to Reduce Operating Costs

By A. H. STONE

Assistant Engineer, Kansas City Terminal Railway

In view of the number of large passenger stations in prospect and under construction at the present time, it may be interesting and helpful to those having the responsibility for their arrangement and design to discuss briefly some practical features affecting the general layout of the building and its operation that have come up during the construction of one of the new stations now being completed. Little if any published information is to be found bearing on these points and, while exactly the same situation may not be met in another terminal, yet the discussion may serve to call attention to modern requirements and thus help to prevent awkward and expensive operating conditions in other stations.

Designs for most of the large passenger terminals have been turned over to architects, working more or less independently of the railroad company; but unless full and free discussion is had with the operating and engineering officers as the preliminary plans are under way, the result is likely to be more ornamental than practical, owing to the difference in the viewpoint of the architect and the railroad man. The former is intent on producing a structure which will reflect credit on his ability as an architect, while the latter is more concerned with a proper layout for handling the business at the minimum of expense. A harmonizing of both ideas is the end to be sought.

The inspection of other stations should include not only a study of the general layout and building appointments, but also a careful study of operating conditions and their cost. The size and extent of a modern passenger terminal make it very expensive to operate, and the opportunity of reducing these costs without impairing the service rendered to the public is worthy of the best efforts of the engineer.

SITE AND GENERAL ARRANGEMENT

The selection of a site for a new passenger station is a difficult task and but little of a general nature can be said, as the circumstances affecting it are distinctly local in character, but, from the public standpoint, accessibility to principal streets and the city's transportation system is of prime importance. Where there is more than one terminal in a city, the one most accessible will get the greatest share of the competitive business.

One of the principal factors influencing the layout of a station is the track arrangement, that is, whether it shall be a stub end or a through terminal. Both have their advantages and disadvantages, although the consensus of opinion now seems to favor the arrangement of through tracks as enabling a greater number of trains to be handled with the same layout. In the case of a union station caring for a large number of roads, involving the transfer of a great number of passengers, baggage and mail from train to train, many of the operating problems are simplified with the stub-end arrangement, but these problems are made greater at a through terminal by the necessity for elevating or depressing the railroad tracks to remove grade crossings with streets.

The general outlines of the building should not be fixed until after a comprehensive scheme for operating trains and handling the baggage, mail and express has been tentatively agreed upon. Plenty of time should be allowed at this stage for a full and free discussion of the plans by all members of the operating staff to eliminate all chances for introducing faulty operating conditions, and those leading to unnecessary operating expenses. As soon as a definite arrangement has

been agreed upon, the detailed designs of the building can proceed rapidly.

A secondary consideration to be given attention at this time, but one that is essential in securing additional revenue to offset the expense of the new building, is whether the designs shall be modified to include an office building which will necessarily detract somewhat from the appearance of the structure, or whether the owning company prefers as a matter of pride to omit this feature and assume the expense of operation and maintenance with such help as can be secured from the rental of concessions usually found in a railroad station. Whichever policy is decided upon, the location of these concessions should always be kept well in mind in order that the public, which has come to expect such conveniences, may be well served, and also that the revenue accruing to the railroad company may be the maximum. A slight change in the location of these concessions frequently increases their earnings by many thousand dollars a year, so the advice of someone experienced in handling them should be obtained in order that their value to the public and as a revenue producing medium may receive the proper consideration. The modern idea is to make these concessions regular stores, provided with ample facilities to display wares for sale. As an indication of the revenue to be obtained from a well located concession, a certain store selling general travelers' supplies, in one of the new stations, is reputed to do a yearly business in excess of \$200,000.

Prior to the construction of the Pennsylvania station in New York, but little attention was given in this country to the separation of incoming and outgoing traffic, yet it is a subject which is growing in importance owing to the rapid increase in travel at the large railroad centers and to the congestion which occurs at certain hours of the day even in some of the smaller stations. This separation can be more easily provided in what might be called true terminals than in those stations which are, in effect, way stations, because the latter stations are usually junction points and provision must be made for the prompt handling of those passengers who must transfer from one train to another with close connections. Such a situation is found at Kansas City, where the larger proportion of those using the station are through passengers, and failure to make the outgoing train may mean a delay of possibly 12 to 24 hours.

No information can be found that will enable one to determine the proper size of public rooms to care for a given number of passengers. The size of the same rooms in other large stations per passengers handled varies between wide limits and leads to the conclusion that the dimensions selected were largely guess work. Where the new building takes the place of an old one, some idea of the amount of space required can be obtained from estimating the increase in size by a comparison with the business at the old station. The accompanying table shows the dimensions of the principal rooms in a number of modern stations, together with an estimated number of passengers handled.

WAITING ROOMS AND LOBBIES

In large terminal stations like those of the New York Central and the Pennsylvania in New York City there is not the necessity for providing a large seating capacity that there is at a large junction point like St. Louis and Kansas City because the frequent train service enables those passing

through to reach their destination with little delay. In the western cities where there are fewer trains serving a given territory, through passengers have longer layovers and consequently a greater area in waiting room must be provided per passenger using the station. The special retiring room for women and the smoking room for men should be located adjacent to this room.

Most modern stations have a space known as the concourse interposed between the waiting room and the train platforms, arranged with entrances and exits so that those who wish can reach trains without passing through the waiting room. There is some advantage in having such a space in that it

ing the main waiting room and should be equipped with tables and chairs. There should be little difficulty in inducing the public to make use of it, especially if there is a lunch counter in connection where they can supplement their meals with warm food. The revenue received would no doubt be more than sufficient for keeping the room in order.

More and more consideration is being given in modern stations to providing special facilities for women and children that make for their comfort and convenience in traveling. This is of greatest importance in those stations where the colonist and homeseeker travel is heavy, because those taking advantage of colonist rates comprise whole families. They

	M. C. Detroit Station	Penn. Station, New York	Grand Central Station, New York	Washington Union Station	St. Louis Union Station	Kansas City Union Station	Boston South Station	C. & N. W. Station, Chicago
Main building	91,770	339,270	202,573	132,526	48,480	140,030	52,480	69,760
Main waiting room	22,932	33,000	17,156	26,280	10,068	26,100	14,625	25,000
Concourse	15,912	131,400	.....	98,800	36,360	24,290	54,900	17,000
Emigrants' waiting room .....	.....	.....	.....	.....	3,590	2,000	.....	14,285
Grand lobby .....	.....	.....	81,122	.....	8,940	22,060	.....	21,900
Women's waiting room	2,704	6,000	2,927	3,150	4,000	1,806	1,496	2,900
Women's toilet	1,350	3,140	4,599	1,482	1,622	1,482	1,796	1,850
Smoking room	1,500	6,000	3,779	1,998	3,930	1,978	2,146	1,200
Men's toilet	2,033	3,600	4,516	1,743	1,198	3,498	1,525	1,450
Parcel room	750	2,780	.....	1,020	1,475	2,040	2,100	1,456
Baggage room .....	.....	50,000	.....	41,683	42,000	74,648	27,794	66,650
Ticket office, windows	19	16	48	8	.....	24	27	20
Restaurant	4,056	6,900	10,090	8,000	4,920	3,891	4,356	4,000
Lunch room	2,028	6,900	.....	3,000	3,956	4,830	4,891	4,600
Schedule trains, daily	75	315	421	241	314	260	784	310
Passengers handled, daily	5,000	.....	75,000	15,000	.....	25,000	100,000	50,000

*Same as main waiting room.

provides a place for those wishing to meet friends to get close to the exit from any platform and it further acts as an unobstructed passageway for outgoing passengers to find their particular train. On the other hand, it increases the distance from the waiting room to the trains, which is thought by some to be a serious objection. In the new Kansas City station this space is eliminated and the gates to trains are located along the sides of the waiting room, enabling passengers to sit close to the gates from which their train departs.

The room around which are the ticket offices, baggage check stand, etc., has various names; in the Pennsylvania station it is known as the general waiting room, although there are no seats in it; in the Grand Central station it is known as the concourse; in the Northwestern station, Chicago, it is known as the public space; in the Washington station it is the waiting room, where the seats are located; in the Kansas City station it is known as the grand lobby. As far as possible, all facilities required by a passenger in preparing for a trip should be located around this room where they can readily be seen.

If there is any considerable number of emigrants to be taken care of, as is the case in most western cities, comfortable quarters easily accessible to trains should be provided where the emigrants can be protected from confidence men and those ready to take advantage of their ignorance. There should be a lunch room in connection where wholesome food can be obtained at reasonable prices and this food should be such as they are accustomed to in the fatherland and not what an American would expect. In addition it may be advisable to provide a laundry room with a steam dryer, such as is furnished in the Northwestern station at Chicago.

Another room that will be found extremely useful is what might be called an isolation room where passengers whom it is desirable to keep away from the general public, such as prisoners, insane patients, or those who have been taken sick with some contagious disease en route, may stay. This room should be so located that it can be reached from incoming and outgoing trains without having to go through the waiting room and should be provided with toilet facilities.

Another desirable room is one where those bringing lunches may eat them in comfort without having the main waiting room littered up. This room should be immediately adjoin-

ing the main waiting room and should be equipped with tables and chairs. There should be little difficulty in inducing the public to make use of it, especially if there is a lunch counter in connection where they can supplement their meals with warm food. The revenue received would no doubt be more than sufficient for keeping the room in order.

are more or less inexperienced in traveling, and require considerable assistance from the station attendants. Since most western roads are interested in the colonization of their lines, special facilities for taking care of the women and children are now considered a necessary adjunct of the women's rooms. A room should be set aside for children where they may run around without being in the way. It should be provided with beds where the little ones may sleep, and with rattan couches for the mothers, who may secure rest knowing that their children are safe. There should be a woman attendant in charge to render assistance and give information. Besides this, a more isolated room for elderly or invalid travelers is needed, where they may be alone and practically undisturbed between their trains. Private bath rooms, shoe shining stands and telephones are also considered necessary in this department. In some stations the matron's duties are more like a chief janitress, while in others she takes a more active part in seeing that those in her charge reach their proper train and secure the services of the ushers. Where the latter is the case, she should be provided with means for quickly calling the ushers, with wheel chairs if necessary.

The rooms for the exclusive use of men should be grouped together, such as the barber shop, smoking rooms, bath rooms and toilets. Not nearly so much space is needed in the smoking room as was formerly considered necessary, as custom in this respect has changed until the room has become simply an ante room to the toilets. A desirable location for a cigar stand should be adjacent to the smoking room, if not in it. The barber shop should have private bath rooms and a shoe shining stand as well as a small stock of gentlemen's furnishings, such as collars, shirts, etc., provided these articles cannot be purchased elsewhere in the building.

PARCELS AND BAGGAGE

A well located parcel room with ample facilities for doing business will prove to be one of the best revenue producers in the station and its importance in this respect is frequently overlooked. Investigation shows that the space devoted to this business will net \$1 or more per square foot used per day. To secure this revenue it is necessary to provide a convenient location with well designed layout of shelving so as to handle the maximum business with the minimum of attendance. Too frequently it is located in some out of the way corner in which

the shelving is crowded in without allowing adequate aisles, or another floor is used to provide the requisite amount of shelving considered necessary. All this tends to increase the cost of operation and to reduce the profits that would otherwise accrue. Shelving made of iron pipe is found the most satisfactory because it is cleaner and does not allow dust and dirt to collect. Provision should be made for checking overcoats and umbrellas; for the former a rod to which coat hangers are attached will be found the best arrangement, as more coats can be taken care of in a given space than by any other means. After the station has been in operation a short time quite a number of unclaimed umbrellas will be accumulated which can be rented on rainy days. The receiving and delivery windows should be located on one side of the room only, because they can be watched better than if located in any other way, but there should never be less than two such windows so that a separation of the receipt and delivery can be made. As a rule people do not call for their hand baggage until just before train departure and cases are not unknown where trains have been missed owing to delays at the parcel window, due to a rush of inbound business. An analysis of the business done at a number of the large stations has developed the fact that two parcels are handled every 24 hours per lineal foot of shelving.

The location of the baggage check stand should be as close as possible to the direct line of travel from the ticket office to the waiting room. Provision should also be made for handling the occasional pieces that come on a conveyance with the passenger, so that a claim check can be issued for it without delay and with the least inconvenience to him. It is usually necessary to provide for the handling of considerable hand baggage and this should be done at a point where it can be received and delivered promptly from trains and where it is convenient to the public. In most modern stations the checking of baggage is done at a different location from that at which the baggage is handled, necessitating some rapid means of sending checks back and forth, as well as informing the check stand of the receipt of baggage, its claim check number, and condition. This is usually accomplished by installing a pneumatic tube system. In large union stations used by a number of railroads, it is not usually considered advisable to have the checkman collect the excess charges on baggage, on account of the difficulty in keeping them posted on the various changes in tariffs and rules. This work is turned over to a cashier who should be located convenient to the public and the checkmen. He should be provided with cabinets for filing the tariffs and for the safe keeping of the C. O. D. and excess checks which are charged to him the same as money. The office of the official in charge of the baggage department should be accessible to the public so that claims for lost or damaged articles, the release of bonded baggage and all other matters of this character may be handled by the office force without taking up the time of the checkmen.

A great deal of thought should be given to the arrangement of facilities on the floor where the baggage and mail are actually handled, that the work may be prosecuted promptly and with a minimum force. The necessity for this is more apparent in those stations where there is a large amount of transfer business from train to train. Frequently mail connections have to be taken care of in 10 or 15 minutes with connecting trains at opposite ends of the station. Again some trains will arrive with a full car of baggage and express, the greater part of which is destined for the city and would warrant switching the car to tracks adjacent to the baggage room, but, in addition, they have a small number of pieces to go forward on connecting trains. All this means that plenty of platforms with cross connections should be provided, that the greatest flexibility in operation may be obtained without interfering with the passengers. Where the distances are great, motor driven trucks can be used to advantage. A suffi-

cient number of scales should be provided with quick reading attachments that individual pieces of baggage received by each expressman may be weighed promptly. If the station is a junction point for a number of roads, it will be the business of the station company to take care of the transfer of the mails, and, for mail weighing periods, scales of a size and capacity to take trucks should be so located as to require as little extra hauling as possible.

TICKETS AND INFORMATION

The location of the ticket office should be made prominent, at the same time providing quarters that will allow the maximum number of patrons to be served with economy and despatch. Where the station is in use by only one or two railroads, it is customary for each road to have quarters of its own, and each ticket seller has his own stock of tickets. In a union station used by a number of railroads, individual ticket offices are not practical, so only one stock of tickets is provided, which is used by all the sellers. Different designs of offices are required for these two cases; for the former, a long rectangular office best meets the conditions; while for the latter, one with the windows on a semi-circle will prove more desirable. By this arrangement the cases containing the local card tickets, which are in most demand, can be placed equidistant from all the windows, with the coupon forms behind them. It is possible to arrange the cases so that there is very little interference between the sellers, and so that the distance between the cases and the windows is reduced to the minimum. For the economical operation of the entire department, the ticket stock should be kept in a storeroom close at hand, but it need not be on the same level. With a little study odd space not otherwise available for use can be made to do, provided it can be reached directly from the ticket office. Quarters should also be provided for visiting auditors so that in checking the office there is little interference with the work of the regular office force. Plenty of natural light should be provided if possible, both for the ticket office proper and for the auditing force. It will be found that a baggage rack placed under the ticket windows will reduce the chances of passengers' hand baggage being stolen while they are buying tickets. Attention is also called to the fact that the marble plate at the ticket window is frequently made so thick that passengers have difficulty in gathering change into their hands without some of the pieces dropping to the floor.

The information bureau is one of the most important features in a station from the standpoint of the traveler and its location should only be made after thorough consideration of the service to be given and the necessity for keeping the expense of operation low. In the first place, a separation should be made of the telephone calls and the personal calls. It will be found desirable to place the attendants handling the telephone calls in a remote portion of the building where it is quiet and where the operators cannot be disturbed. The room should be provided with special desks fitted up so that folders and guides may be referred to promptly. Each operator should have a special headpiece with a transmitter and receiver combined, allowing both hands to be free. The wires should end in a jack board to permit calls to be held until answered. With the telephone calls handled at another location, the main information bureau can give better service than if the attendants are continually interrupted by the telephone.

There is another room which is needed especially in union stations where the depot passenger representative of the individual lines can give information to prospective passengers. It frequently happens that on Sundays or holidays when the city passenger offices are closed, people go to the station to get information concerning long trips and other information which would take considerable time to give even if the attendants could keep posted. This interferes with the regular work of the bureau and the idea would be to call the depot

passenger representative of the line over which the person wishes to travel, who would conduct him to this room, where the necessary time could be taken to answer fully all questions. The same room could also be used as an appointment room where an incoming passenger en route through the city with a layover could keep his business engagements without loss of time. Arrangements for the use of this room could be made through the station master.

RESTAURANT AND LUNCH ROOM

The problem to be solved in the restaurant and lunch room is to serve the maximum number of people in the minimum time and the first consideration should be to locate the kitchen as close as possible to the dining rooms, not only to reduce the time required by the waiters to pass back and forth, but to enable the food at the tables to be received in good condition. The arrangement of the kitchen equipment should receive the attention of an expert restaurateur and the selection of the manager of this department should be made as early as possible in order to have the benefit of his advice in the first stages of the design. The lunch room especially should be laid out to give quick service, as a greater net revenue can be made from this room than the restaurant, since more people will patronize it. Proper arrangements should be made so that silverware, glasses and linen can be handled close to the points where they will be used, to reduce the time a waiter must be away from his station. In this connection it will be found advisable to consider some means for communicating orders to the kitchen without the need of the waiter's going himself. By a satisfactory solution of these requirements the only time a waiter need be away from his station is when it is necessary to bring food from the kitchen. An entrance for the employees of this department should be provided so that they will not have to use the public entrances in reaching the kitchen.

As I indicated at the beginning of this article, it is impossible to make general statements concerning the size, layout and design of the different departments in a large passenger station that will be applicable in all places. It is hoped, however, that the above brief review of some of the practical considerations in modern stations may be of interest.

SOCIETY OF RAILWAY FINANCIAL OFFICERS

The annual meeting of the Society of Railway Financial Officers was held at the Hotel Aspinwall, Lenox, Mass., on September 15, 16 and 17. The society had a well-attended and instructive meeting, taking up among other things the matter of a uniform form of vouchers and agents' drafts, general railway clearing-house, loose-leaf system for treasury department records, methods of paying large shop forces, freight collection bureaus in large cities and other items of general interest.

President George A. Walker, assistant treasurer of the Pennsylvania Railroad, presented the president's address, in which he discussed the effect of the European war on the business situation, the rate decision of the Interstate Commerce Commission, the proposed war tax, and railway mail pay. He also described a plan by which the lines of the Pennsylvania Railroad system, both east and west, beginning with July, 1914, established a system of clearing all their accounts with other railroad companies through the treasurer of the Pennsylvania Railroad at Philadelphia, under which settlements are to be made on a net basis. The system embraces 23 separate reporting railroad companies and the plan involves the transfer of all charges and credits through the Pennsylvania Railroad, where they are consolidated in the office of the auditor of miscellaneous accounts. The consolidation will thus permit a foreign line making one draft for the balance in its favor, or one draft for several classes of accounts. It is the intention ultimately to include car repairs and overcharges, and in fact all items. If the

balance is in favor of the Pennsylvania system one draft will be made by the treasurer of the Pennsylvania Railroad against a foreign line which will embrace the charges and credits as reported to and consolidated by the auditor of miscellaneous accounts. The plan is now in effect between the Pennsylvania system lines and the Chicago, Burlington & Quincy, Baltimore & Ohio, and Central Railroad of New Jersey. It is expected to prove a great saving in financial transactions if foreign lines will co-operate and adhere to the principle of making one draft or check for the balance due to or by them in connection with the adjustment of Pennsylvania system accounts. Charges and credits reported by the system lines to the Pennsylvania Railroad during a calendar month are settled by one draft for the balance on the fifth of the following month.

Secretary Nyquist read the report of the executive committee, which reported that important progress had been made during the year in the direction of the general railway clearing-house settlement plan. The membership is now 141, a net increase during the year of 21.

A. O. Wellman presented a paper by E. L. Copeland, secretary and treasurer of the Santa Fe, on "Curtalement of Credits by Railroads in Establishing Collection Bureaus."

Odell Smith, secretary and treasurer of the Norfolk & Washington Steamboat Company, presented a paper on "The Relations of Railroads and Financiers to Stock Values."

L. B. Franklin, vice-president of the Guaranty Trust Company of New York, addressed the society on the subject of "The Effect of the War on American Railroad Bonds."

A resolution was adopted expressing the sense of the meeting that the society's committee on Clearing-House Settlements should be continued, and that the meeting favored a sustained continuance of the efforts already made to bring about the establishment of a railroad clearing-house, in which the co-operation of the American Association of Railway Accounting Officers is, of course, essential. It was also resolved that the meeting suggest the redistribution to members in pamphlet form of copies of the last report of the clearing-house committee, with printed copies of the exhibits, together with the latest available estimate of the cost of establishing and operating the proposed clearing-house, to the end that each member may lend his best efforts to bring to the attention of his chief executive officer the scope of the plan, the benefits, advantages and saving in cost which it is believed will flow from it, with a view to ascertaining as soon as possible the attitude of each carrier.

The following officers were elected for the ensuing year: President, A. O. Wellman, assistant treasurer, Atchison, Topeka & Santa Fe, Topeka, Kan.; first vice-president, J. G. Stidger, president, Wheeling & Lake Erie, Cleveland, Ohio; second vice-president, C. W. Rhodes, assistant treasurer, Baltimore & Ohio, Baltimore; secretary and treasurer, Carl Nyquist, assistant secretary, Chicago, Rock Island & Pacific, Chicago.

The time and place of the next annual meeting of the society will not be decided until after the first of the coming year.

LABOR UNIONS IN POLITICS.—Pennsylvania's state police force, which has attracted general attention by its efficiency in dealing with labor disturbances and has afforded protection from tramps by patrolling large sections of the rural districts of the state, is being made an issue in the election of members of the state's general assembly which will meet in January. Men connected with the State Federation of Labor are buttonholing legislative candidates on the subject of voting for the abolition of the force. On the other hand many property owners, especially in rural districts, are insisting that the police force be increased, because it furnishes protection to large areas where tramps formerly annoyed farmers and endangered barns. The Pennsylvania Conservation Association's committee on agricultural conservation has endorsed the police for rural patrol work, while the Pennsylvania Manufacturers' Association is combating the movement launched by the labor leaders.

Convention of Traveling Engineers' Association

Address by Frank McManamy; Papers on Mechanical Stokers, Operation of Locomotives and Speed Recorders

The opening sessions of the Traveling Engineers' Association convention were reported in the issue of last week on page 503. The following is a report of the remainder of the convention:

ADDRESS BY FRANK MCMANAMY

Frank McManamy, chief inspector of locomotive boilers, Interstate Commerce Commission, addressed the association Wednesday afternoon, calling attention to the many ways in which the traveling engineers and the government inspectors may be of assistance to each other. Attention was called to the increasing number of locomotives inspected by the 50 government inspectors, and the decreasing number of locomotives found defective, which is a credit to both the inspectors and the railroads. In the year 1912, 74,234 locomotives were inspected, of which 65.7 per cent were found with reportable defects; in 1913, 90,356 locomotives were inspected and 60.3 per cent were defective, and in 1914, 92,716 locomotives were inspected, of which 52.9 per cent were found with reportable defects. All of these, however, were not in direct violation of the law. Those that were in violation represented 4.5 per cent in 1912, 5.2 per cent in 1913, and 3.6 per cent in 1914, of the number of locomotives inspected. The number of accidents has also decreased during this period, as shown by the following reportable accidents due to the failure of locomotive boilers and their appurtenances:

Year	Number of accidents	Number killed	Number injured
1912.....	856	91	1,005
1913.....	820	36	911
1914.....	516	21	574

It is believed that these figures represent the results of the inspectors and the effect of the law. The greatest trouble from accidents has been with the failure of arch tubes and four out of every five of the accidents are caused by their improper application. The careful cleaning of them is also of vital importance.

All roads should insist on a proper inspection of the locomotives before they leave the terminal, and some roads provide blanks to be filled out by the engineer for this purpose. Some difficulty is being found in having the boilers washed out properly. All wash out plugs should be removed at every washing and the work should be done in a thorough manner. The government inspectors want to co-operate as much as possible with the railroads in correcting defects, and so far have found that most of the railroads are anxious to co-operate with them so that it has been unnecessary as yet to file suits in the courts regarding the violation of the boiler inspection law.

ADVANTAGES OF MECHANICAL STOKERS

The advantage to be derived from stoker firing of locomotives is the ability to fire the engine continually up to its capacity, and it is found that the stoker-fired locomotive can either take the same tonnage as the non-stoker over the road in less time, or a larger train can be handled in the same time. As a concrete example of this fact we note that in a recent test for the capacity of locomotives a stoker-fired engine was operated for six hours, firing an average of 7,800 lb. of coal per hour, which means a continual capacity of the locomotive firing in excess of that which could be maintained by hand firing.

It has also been demonstrated that mechanical stokers have permitted the enlarging of the exhaust nozzle area from 5 to 5½ in., which means an increase of about 3 sq. in., thus giving the locomotive greater efficiency. Other advantages are obtained by not opening the fire doors, viz.: doing away with the glare or dazzling light which is produced after dark and which makes the observation of signals more difficult. It also prevents sud-

den change in firebox temperature which produces contraction of sheets or tubes.

A properly adjusted mechanical stoker will reduce the use of fire hook or rake on the fire bed, as the distribution of coal can be regulated to prevent banking. This is an advantage, as the frequent use of the rake disturbs particles of fuel which are carried by the draft onto the brick arch or lodged in the flues, reducing the draft.

The application of the stoker has proved to be a benefit from the standpoint of smoke abatement and there are some stoker locomotives at present being used in the heavy transfer service within the limits of large cities, resulting in practically complete elimination of smoke. Although all types of stokers are not showing an improvement in smoke prevention, the good results of some types indicate that future developments may be expected to produce good results along this line.

Those engaged in stoker firing do not have to devote as much time and attention to the use of the methods employed in hand firing, but are required to operate the mechanical stoking machine which furnishes them with a practical experience in the care of steam driven machinery. This mechanical education should greatly aid in the development from fireman to locomotive engineer. This, we believe, is an improved condition and should greatly increase the possibilities of securing a higher type of candidate for the position of locomotive engineer.

We have not received any information which indicates that the development of the mechanical stoker has reached a point where the utilization of cheaper fuel has been accomplished.

In conclusion, we will not attempt to state the cost of installation and maintenance of the mechanical stoker, as the different types will vary in these items, but from the developments up to date it is safe to say that the advantages may be expected to greatly multiply with the service of the machines and by the efforts of the various stoker manufacturers.

The report is signed by J. H. DeSalis, chairman; S. V. Sproul, O. E. Whitcomb, T. B. Bowen, O. B. Capps, T. B. Burgess, H. F. Hensen and A. L. Lopshire.

Discussion.—Those members familiar with mechanical stokers were very enthusiastic regarding their use. The Norfolk & Western is operating the Street, Hannah and Standard stokers and is obtaining good results from them all. It was stated, however, that a stoker failure usually meant an engine failure, as it was very difficult for a fireman to build up a stoker fire with the scoop without permitting the steam pressure to drop, on account of the light fire the stoker carries. Reports regarding the Standard stoker indicated that 7,670 miles have been made by one engine during July and August, with an average boiler pressure of 198 lb., and without once hooking the fire. The grates were shaken on an average of every 98 miles in July and every 71 miles in August. The efficiency of that stoker was 99.7 per cent in July and 100 per cent in August.

Fred Kirby (B. & O.) stated that between 225 and 250 stokers are in use on his road. They have found that the efficiency of the locomotives has been increased 15 to 20 per cent on account of the mechanical stoker. A smaller number of firemen will be required for the stoker engines and a better grade of men may be obtained. A cheaper grade of coal can be used on stoker engines, which, of course, means economy in fuel. The best results are obtained with a gas coal. On the second division of the Baltimore & Ohio, where there are a large number of stoker engines in service, there was a period of 45 days in which the trains were not delayed over five minutes on account of the stoker locomotives. The stoker engine makes the work much lighter for the fireman and gives him the opportunity and training to better prepare himself for the position

all fuel used by any one locomotive is consumed in the terminals. Close co-operation should prevail between the heads of the transportation and the mechanical departments in the matter of ordering power and firing up before needed.

In conclusion, the committee has endeavored to review this subject in a general way without regard to equipment. In doing this we are not unmindful of other possible losses through lack of proper car or train loading. Locomotives may be kept in perfect condition at great cost, may be operated and fired in a manner 100 per cent perfect, loaded to full tonnage capacity, yet fail in good returns. The matter of hauling empty or half-loaded cars of great weight and size, increases operating expenses and proportionately reduces net returns, therefore, should be a matter of mutual concern to every railroad in the land.

The report is signed by J. R. Scott, chairman; P. J. Miller, J. J. McNeil, W. L. Robinson, C. W. Hyde, F. W. Edwards, M. H. Haig and W. G. Tawse.

Discussion.—The unnecessary stopping of trains does not permit of good locomotive performance, tests with an ordinary passenger train with a superheater engine showing that an average of 300 lb. of coal and 2,100 lb. of water are consumed at each stop in addition to the wear of the brake shoes and equipment. The question of pooled engines versus regularly assigned engines was thoroughly discussed. The members were strong in their approval of the system of regularly assigned engines. A member from the St. Louis & San Francisco stated that with regularly assigned engines there was an average of 18,000 miles per engine failure in a recent six-months period, as against an average of 6,000 miles per engine failure when the pooled system was in effect. He also stated that by changing from the pooled system to the regularly assigned engines there had been a decrease of 6 per cent in fuel used with an increase of 2.33 per cent in tonnage hauled. It was believed that in most every case the engineers would take better care of their engines and numerous cases were mentioned where the mileage between shopings had been increased by adopting the regularly assigned engine plan. While more engines are needed than with the pooled system it was believed that the additional investment would be warranted.

Superheater engines must be carefully maintained in order to obtain the full benefit of the device. One road keeps a record of the date when the flues were last cleaned in order that the roundhouse foreman may know when to clean them again, no matter on what part of the road the engine may be. The water in the boiler of a superheater locomotive should not be carried too high, as the temperature of the steam at the cylinders will not then be as high as it should be. It is believed by many that the use of a special grade of oil for the lubrication of the cylinders is not necessary, but when drifting the throttle should always be opened slightly.

Some roads give particular attention to the arrangement of the engine cab, seeking to have everything as convenient for the engineer as possible. This was believed to be good practice. If the engineers were required to make thorough inspection reports the terminal inspectors would be greatly assisted, for oftentimes a defect may be more readily detected while the engine is running than when standing.

Several members spoke of very marked success with the use of flange oilers on locomotives that had previously given considerable trouble from worn flanges. Instances were mentioned where the mileage of the driving wheel tires had been tripled by the use of the flange oiler and in some cases derailment troubles have been entirely eliminated.

SPEED RECORDERS

Frederick S. Kerby (Baltimore & Ohio) presented a paper on this subject, in which he briefly described the different kinds of speed recorders in service on the railroads replying to a circular he sent out in preparation for this paper. He also mentioned the use of an electric annunciator that can be attached to the speed

recorders of any type for the purpose of ringing a bell when a certain definite speed has been reached. If the rate of speed is more than two miles above the limit the bell will ring until the decreasing speed reaches and passes below the limit at which the device is set. This has been tested out on six different engines and has proven successful. If the recording gage should become broken or for any reason is out of service the bell will operate just the same, which is a great advantage.

The chief advantage derived from the use of the speed recorder is the factor of safety. It can also be used to advantage for checking the speed of trains, and with those recorders provided with the time curve, the time at stops is readily ascertained. The speed recorder is also a great factor in settling disputes in regard to the speed at times of accidents and the speeds at which the engines run by slow orders. By thus controlling the speeds it has been stated that the roads using them are not as liable to have over-heated bearings. It also gives an engineer a better idea as to the speed he is running and helps him to make better time without the necessary spurting. Some roads claim that the fuel consumption has been increased on account of the speed restriction on descending grades, as a higher rate of speed will have to be maintained on the ascending grades. The cost of maintaining speed recorders has only been estimated. One road states the cost is from \$120 to \$140 a year, while another road estimates \$75 a year.

Discussion.—Those roads using the speed recorders reported favorably as to their use, believing that derailments have been materially reduced. It has also been found that the number of hot boxes was decreased. The enginemen like them as it gives them a guide by which they are better able to maintain schedule speed. A leeway of five miles per hour was believed fair before disciplining an engineer for a violation. The El Paso & Southwestern test the recorders in case of a violation of the speed limit before the engineers are disciplined as the gages do not always register in accord with the record. All recorders should be carefully maintained, and on some roads the engineers are required to check the reading of the gage by taking the time between mile posts.

OTHER BUSINESS

A paper was read by Alonzo G. Kinyon, supervisor of locomotive operation, Seaboard Air Line, on the "Practical Chemistry of Combustion," which describes methods similar to those used on the Northern Pacific, a description of which was published in the *Railway Age Gazette* of May 1, 1914, on page 976. W. H. Corbett, chairman of the committee on the Revision of Progressive Examination for Firemen for Promotion and New Men for Employment, reported that a new book of rules has been made and will be distributed in the near future. The following is the list of subjects for 1915:

What effect does the mechanical placing of fuel in fire boxes and the lubrication of the locomotive have on the cost of operation?

Recommended practices for the employment and training of new men for firemen.

The advantages of the use of superheaters, brick arches and other modern appliances on large engines, especially those of the Mallet type.

How can the road foreman of engines improve the handling of the air brakes on modern trains?

The electro-pneumatic brake.

The effect of properly designed valve gear on locomotive fuel economy and operation.

Scientific train loading; tonnage rating.

The constitution and by-laws of the association were amended to include a fourth and fifth vice-president. The following officers were elected for the ensuing year: President, J. C. Petty (N. C. & St. L.); first vice-president, J. R. Scott (St. L. & S. F.); second vice-president, B. J. Feeny (Ill. Cent.); third vice-president, H. F. Henson (N. & W.); fourth vice-president, W. L. Robinson (B. & O.); fifth vice-president, G. A. Kell

(G. T.); treasurer, D. Meadows (Mich. Cent.); secretary, W. O. Thompson (N. Y. C. & H. R.). Mr. Thompson was paid special tribute by being elected to the office of secretary for life. He is one of the three living charter members of the association.

At the close of the convention the secretary reported a total membership of 1,137, of which nearly 50 per cent were registered at this convention. The treasurer reported a cash balance of \$3,190. Chicago received the greatest number of votes for the next place of meeting.

NEW PASSENGER STATION AT POCATELLO, IDAHO

The Oregon Short Line has recently let a contract for the construction of a new passenger station at Pocatello, Idaho, to the Lynch-Cannon Engineering Company, Salt Lake City, Utah.

The main portion of the building is 77 ft. by 89 ft. in area, and is three stories high, with a two-story wing on each end 60 ft. by 68 ft. The building is of fireproof construction throughout. The first story is of gray stone, and the second and third stories are of dark red brick laid in ornamental patterns, with cut stone trim. The roof is of asbestos shingles.

The first floor contains the usual facilities for the accommodation of passengers and for handling baggage and express. The main entrance is from the south. To the left of the outer and inner vestibules, are the women's rest room and the secondary stair hall. On the right is the men's smoking room. The space on the opposite side of the general waiting room is devoted to the ticket office, with an exit to the tracks on each side. A newsstand and toilet room are located on the right, and the main stair hall and depot master's room on the left. The general waiting room is 41 ft. by 89 ft., with a balcony around it on the second floor. The left wing of the first floor is devoted to a lunch room on the track side, and a dining room, pantry and kitchen on the street side. In the right wing adjoining the general waiting room, are an emigrants' waiting room, a public space and the mail clerk's office. Next to these is the baggage room which is 30 ft. wide and 60 ft. long and extends over the entire width of the wing. At the end of the wing is the express room and express office. The floors in the general waiting room, public space, inner vestibule, rest and smoking rooms, stair hall and dining room are of tile, all others being of cement.

The second floor is devoted entirely to the railroad company's offices, those of the Montana division occupying the left half of the floor and those of the Idaho division, the right half. There is also a file room and a vault in each wing, and a telegraph

room in the right wing. The building will be heated with a hot water system. The interior of the building will be decorated with a color scheme of chocolate red and gray stone color.

This station was designed by Carrere & Hastings, New York, and will be built under the direction of Carl Stradley, chief engineer. All endeavor will be made for its completion in time to handle the travel during the Panama-Pacific Exposition.

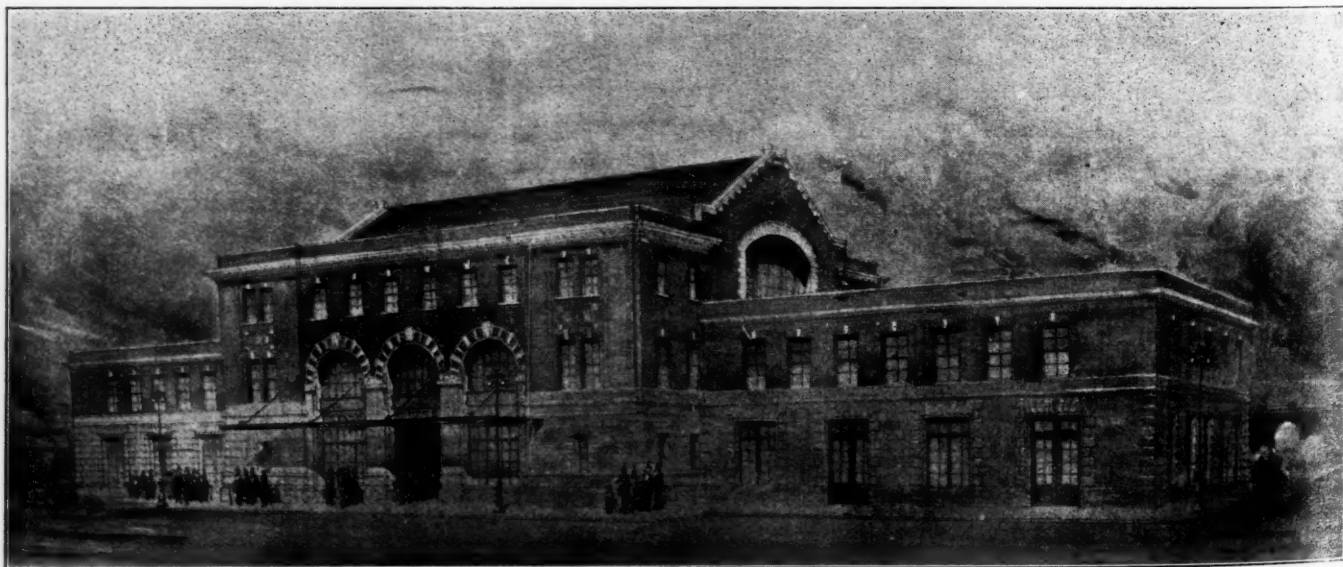
PACKAGE DELIVERIES AT BOSTON FREIGHT HOUSES

The subject for discussion at the meeting of the New York Railroad Club, September 18, was the delivery and handling of miscellaneous freight at the Boston freight terminals, a paper being presented by Harold Pender, H. F. Thomson and C. P. Eldred, who made a study of this matter on behalf of the electrical engineering department of the Massachusetts Institute of Technology. Most of the work was done about a year ago. The paper was read by Dr. Pender, who is now a member of the faculty of the University of Pennsylvania; and the discussion was closed by Mr. Thomson.

This investigation was undertaken because of complaints on the part of shippers, consignees and teamsters, of delays due to the methods employed in delivering freight and in sending out notices of arrival. The institute had already made an investigation of the use of motor trucks, in Boston, in the place of horses, for moving freight in the street. The New York, New Haven & Hartford and the Boston & Maine contributed between them the sum of \$2,000 toward the expenses of the investigation and it was chiefly the freight houses of these roads which were investigated. The New Haven road has in Boston 11 freight houses and 2 piers, and the Boston & Maine has 35 freight houses.

As the result of a large number of observations, it was found that the average team spent about one-third of its time each day in the railroad yard. The studies were confined to package freight, brought to or taken from the doors of the freight houses. It was found, incidentally, that teamsters lose more time at the store doors than at the railroad yards. The average time spent by a wagon at an inward freight house was found to be 46.7 minutes; of which 10.3 minutes was spent in moving in the yard; 8.5 minutes at the cashier's office; 4.1 minutes searching for freight, including searches when nothing was found; 16.2 minutes loading; 2.2 minutes with the delivery clerk, 1.0 helping other drivers, 2.3 minutes roping, etc., and so on. The total includes 3.5 minutes charged to loafing.

Another observation showed a larger percentage of time spent



Street Front of Proposed Oregon Short Line Station at Pocatello, Idaho

in searching for freight, and Dr. Pender said that during the time that his men were making their observations, there was a marked improvement in this matter; the freight agents saw that the goods were more systematically placed in the house so that a teamster could find his shipment more readily.

In one set of observations it was found that about one-fifth of the calls of wagons at the doors were ineffective, the man got no freight. A part of the time shown in this calculation is due to going to the wrong door, and then having to go to another one. This delay was due to errors on the part of the clerks in making out the delivery checks, and also to mistakes by the drivers.

It was found that complaints by drivers of delays because of waiting for their turn at doors were largely without any real basis in fact. The average at inward freight houses was only 1.5 minutes, and at outward freight houses 4 minutes. The figures include the congested morning and evening hours. Figures quoted from reports of studies at Chicago, Detroit and New York City, show that Boston makes a much better record in this matter than the places referred to.

In all of the studies it was found that, on the average, wagons carry only about one-half their normal capacity. Studies in other cities have given results about the same as this.

Part second of this paper deals with the time elapsed between arrival of train in yard and delivery of freight. Excluding certain traffic, the conditions of which were not quite normal, it was found that the average time between the arrival of a train and the minute when the freight was ready for delivery was about 8 hours. In some, perhaps many, cases shipments were ready for delivery from one to two hours before the delivery checks were in the clerk's hands ready to be delivered to the teamster. The average time required to unload a car was from 30 to 45 minutes.

While large quantities of freight are taken away promptly, it was found that, on the average, at the terminal of the Portland division of the Boston & Maine, freight was not taken away until 18 hours after it was ready. This average, however, seems to refer to what may be called the active freight; for, outside of this, there were 1,027 consignments, amounting to 476 tons, which were not called for until after the third day. It is the rule to charge storage on goods left more than 72 hours. Again, it was found that large quantities of freight were left in the house for 24 hours or more after the teamster had taken his delivery check from the clerk.

Most of the cars coming into Boston with L. C. L. freight were loaded far below their full capacity; and the average of the cars examined was, at the New Haven Terminal 6 tons, and at the Boston & Maine 4 tons.

The authors of this paper profess to make no recommendations; first, because they were engaged only to report facts, and second, because they lacked the time and money to go further into the subject. They do, however, offer a number of observations which have the effect of recommendations. One of these is that, in curing wagon delays, the prime factor is the driver. Some estimates also are given of possible reductions in the time taken by the teamsters in making inquiries, searching for freight, and in moving about in the yard. They think that with the co-operation of the railroad the teamster who spends 67 minutes at the inbound freight house might possibly reduce this to 54 minutes and that the time at outbound houses, 39 minutes, might be reduced to 33 minutes. But, though it is held that these reductions could be made by the railroad, the reasons for this conclusion are not very fully set forth. One road has put on sorting gangs, whose duty it is to keep freight properly sorted in the houses, and to move forward, each night, all uncalled for consignments.

The recommendations deal only with the conditions as they are. To make improvements in the houses or in the general system would cost much money, and it is beyond the scope of this study to estimate these costs.

In regard to the time lost between the arrival of a train and

having the goods ready for delivery in the house, the obvious recommendation is made that delivery checks ought always to be ready as soon as the goods are ready. It appears that at the New Haven terminal, the majority of the waybills do not arrive in advance of the freight; and some of the studies also showed that the preparation of delivery checks was not begun until the freight arrived, even if the waybills were in hand before. Delivery checks cannot be given to the teamster until the freight is unloaded, as the clerk must first mark on the check the number of the door where the goods may be found.

At one New Haven terminal freight was available on the floor of the freight house on the average two hours before the delivery checks were ready. At the Boston & Maine this time was about one hour.

DISCUSSION

In the discussion D. B. Rushmore, an engineer of the General Electric Company, commending the Massachusetts Institute of Technology for making this scientific study of a branch of industry which has been largely neglected, called for co-operation by engineers generally. Why should not the large number of manufacturers who make devices for use in handling freight in freight houses combine to promote their common cause? It is a shame that so little progress is made. Recently, in New York, a pier has been built costing a million dollars and it has no devices for handling freight more modern than were in use fifty years ago. The General Electric Company has made numerous studies and experiments, but as yet has not got anywhere. The time is ripe for doing something, and all interested should get together. Several men have set up as consulting engineers in this line, but no progress is reported as yet. Possibly the government should take a hand and try to correlate the efforts of men in different fields. However, the railroads should be wise enough to forestall the government.

S. G. Thompson, consulting engineer of the Public Service corporation of New Jersey, thought the railroads should feel flattered at the record shown in this paper, which refutes the charges of those critics who say that freight yards are not well managed. The paper shows that the best possible saving that could be made would save teamsters only 7 per cent of their time; and this 7 per cent, which is equal to 38 minutes a day, is not enough to enable them to make another trip. Therefore, the teamster would not be helped. Mr. Thompson thought that the "loafing" time shown in the records ought not to be charged to the teamsters. They were warming themselves or taking reasonable rest and were making good use of their time.

William McCellan commended the Boston railroads for having, as in this case, called in trained minds to study a problem which for so long a time has been left to those who use only rule of thumb methods. Scientific facts like these will demolish the allegations of those who have adjured the railroads to practice more economy, but have not told them how the advice could be carried out.

Mr. Thomson, replying to Mr. Thompson, observed that the average of 7 per cent to be saved by teamsters did not mean 38 minutes for each teamster; it meant rather a much longer time for some of them and much less for others. In many cases the time saved could, no doubt, be profitably used. He said that the time shown in the records as loafing time meant time really wasted, as where teamsters were found engaged in conversation for a half hour. The freight congestion in West street, New York City, having been referred to Mr. Thomson said that that was a place where the experiment of keeping freight houses open 24 hours a day might be hopefully tried. It would be necessary, of course, in any such plan, for a considerable number of shippers and consignees to co-operate.

A KOREAN LIGHT RAILWAY.—From the graphite mine at Denksu Dong, in North Choong-Chung province of Korea, a light railway, 13 miles in length, runs to Whang-Kan, a station on the Seoul-Fusan Railways.

RAILWAY SIGNAL ASSOCIATION

The Railway Signal Association opened its nineteenth annual convention at Hotel Champlain, Bluff Point, N. Y., on Tuesday morning of this week, President F. P. Patenall in the chair.

Mr. Patenall in his opening address complimented the committees on their arduous and successful labors, referring especially to the Manual of the association, which is a monument marking a great amount of valuable work done during the past few years. This manual now contains 150 standard designs; and the association, through it, is a real power in the railroad world, and in the commercial world as affected by signal work.

The financial standing of the association is good, but the speaker reminded the members that it is a voluntary association and that members must constantly work to increase its influence. There are now 1,250 members; this ought to be increased within the next 12 months to 2,500. There are large numbers of railroad men who are eligible, and who ought to be brought in.

The work of the signal engineer is expanding, and this must continue in spite of hard times. He is called upon more and more each year to devise means of checking the human equation; and this means more expensive and more delicate apparatus. The use of alternating currents in automatic signaling has now become extensive, and even much larger installations of this kind may be expected in the near future.

To be thoroughly up-to-date the signal engineer of today must be ready to meet the demand for operation of single track railroads safely by signal indications alone, for this demand now appears in many places. The successful accomplishment of this improvement will defer the expenditure of considerable sums of money otherwise thought to be necessary for double tracking.

Continuing, Mr. Patenall said:

"Other signal engineers tell me that to complete their lines from a standpoint of complete signaling will require expenditures in the future equal to the total amount spent in the last 20 years; so that there is left a vast amount of work for us to do. . . . Signal engineers of the present day are supposed to know the physical as well as all other characteristics of their roads, and very properly so if they expect to aspire to other important positions in the operating field. Their position in the engineering and operating department is becoming more important all the time, and they must know how, when and where to spend money that will insure the best returns. Congress has deemed it necessary to obtain a physical valuation of our railroads and it is estimated that the cost will be at least fifty million dollars. This amount must be earned, as well as the dividends. Some of our best railroad men have taken service with the government in this work, and I hope when this is completed, we shall be able to get a similar amount assigned for signaling purposes.

"Investigations are frequently being made by the railroads of the many automatic train control devices brought out, and assistance is being rendered the inventors, both technically and financially. . . . Taking into consideration the variable conditions on our railroads, a most difficult task has been placed before us; but the work is being prosecuted with diligence and we expect to surmount these obstacles. . . .

" . . . The time has arrived for me to step down but not out. I again assure you all of my appreciation of your hearty support during my term of office."

The treasurer's report showed transactions during the eleven months since the last meeting of over \$10,000, and cash now on hand \$2,245. The assets of the association are about \$5,000 above the liabilities.

The report of the board of directors, reviewing the year, recommended that for the more efficient conduct of committee work, which is the life of the association, regional committees be formed; this would facilitate full and regular attendance.

On recommendation of Committee No. 1 the meeting after brief discussion adopted and ordered to letter ballot, the disk indicator, "Take Siding," for use at non-interlocked switches, as reported and discussed at the last meeting.* The committee

proposes that at night this indicator be illuminated by reflected light. This committee reported a code of requisites for switch indicators, to be used as switches on roads having automatic block signals, which after explanations of a number of clauses by the chairman was adopted and ordered sent to letter ballot; and it was voted that if the letter ballot should be favorable, the code should be sent to the American Railway Association for its information. The meeting adopted as "correct information" a code of requisites for automatic train control, corresponding to those of the American Railway Association, as reported by this committee.

The forms of blanks for reports of trains stopped or improperly delayed by signals and for summarizing the records of signal performance, as discussed at several previous meetings and as further revised by a special committee, W. N. Manuel, chairman, were adopted for submission to letter ballot for inclusion in the manual of standards.

The committee on storage battery, R. B. Ellsworth, chairman, reported specifications for a concrete storage battery box which, after slight modifications were ordered to letter ballot.

This committee reported a code of specifications for nickel iron alkaloid storage batteries, which after a long discussion was disapproved as a standard, because certain paragraphs referred to an exclusive design; but the whole was approved to be printed as information. A code of specifications for electrolyte for lead type storage battery, after slight modifications was adopted and ordered to letter ballot.

Letter ballots were also ordered on plans No. 1,340, 1,241, 1,343 and 1,342, which were fully discussed at the March meeting; and a glass jar (plan 1,224) and a storage battery separator (plan 1,341) presented at this meeting were likewise adopted; but the kind of wood for the separator was not specified. The afternoon of the first day was taken up with long and detailed discussion of lightning arresters and of insulation for wires. Concerning arresters there were so many differences that the subject was recommitted, to be taken up again on the second or third day. This committee, E. G. Hawkins, chairman, has done much original work, on a difficult subject, and the questions of members were varied and almost innumerable. All of the three codes of specifications—air gap, vacuum gap, and choke coil—were finally accepted as progress reports, the sentiment of the meeting being that the committee had made the best beginning possible in a work of this nature.

The wire committee, W. H. Elliott, chairman, had to answer about a hundred questions. Its code of specifications for galvanized messenger wire were finally, with a number of changes, ordered to letter ballot. It was the sense of the meeting that inches (decimals) should be the only terms in which diameters of wire should be expressed, the time-honored names "B. W. G.", etc., being abandoned. A table of recommended sags was accepted and ordered to letter ballot. Specifications for rubber insulating tape, after a number of changes, including a clause making the use of tin foil wrappers for packages optional, were ordered to letter ballot. The same action was taken concerning friction tape.

C. C. Anthony and six other prominent members of the association presented three amendments to the constitution which were adopted and sent to letter ballot. These broaden the qualifications for active membership in the association so that members and engineers of national and state commissions, editors, college professors and others, not engaged in the supply business, may be active members; establish a new class of "life members" so that old members may be kept on the roll without requiring them to pay dues; and provide for a variable date for the annual meeting. The board of direction are to be free to fix the time of the meeting, or to change the place, when necessary without going through the formality of a letter ballot. This amendment also entitles the board of direction to call special meetings.

The remaining sessions of the convention will be reported in next week's issue.

**Railway Age Gazette*, June 5, 1914, page 1229.

Methods of Artificial Lighting for Railroad Offices

Four Requirements of Artificial Lighting Almost Universally Demanded. Advantages of Indirect Lighting

By JOHN A. HOEVELER
Illuminating Engineer, Chicago.

Practically the only difference between railroad offices and the offices of any large corporation lies in the greater scope and wider range of activities carried on in the former. A railroad office building houses a large clerical force, a statistical department, an engineering department, a drafting department, telegraphers', dispatchers' and numerous executive offices, and in many instances, a city ticket office. The illumination problems encountered are manifold and quite different in their essential

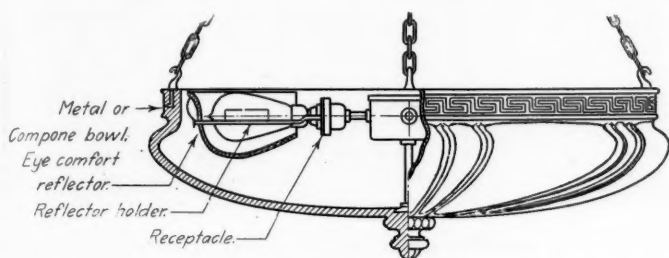


Fig. 1—A Shallow Type Indirect Bowl Equipped with X-Ray Silvered Glass Reflectors

features. However, they are not characteristic of the railroad business only, but are the same that countless other concerns in other lines of business must solve. Hence, the railroad may readily benefit by the experiences of others.

The standard of lighting is rising continuously, and from observation one is led to believe that the rise is inversely proportional to the decrease in the cost of light per unit of lumin-

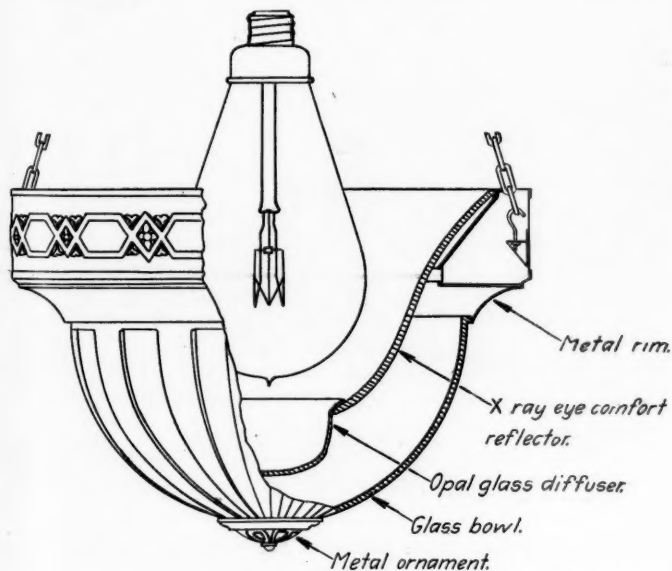


Fig. 2—A Luminous Bowl Indirect Fixture Equipped with a Silvered Glass Reflector and an Opal Glass Diffuser

ous energy, resulting from the ever increasing efficiency of the incandescent lamp. In the days of the carbon lamp, localized lighting at each desk and table or file with comparatively little general illumination, was the order of things. With the coming of the more efficient lamps in larger sizes, however, general overhead illumination, with its decided advantages, became more generally used. However, the highly efficient tungsten lamp, with its greatly increased intrinsic brilliancy, brought with it the evils

of eye strain and rapid fatigue when working under this light. It was necessary to resort to the use of deep bowl reflectors totally enclosing glassware, semi-indirect lighting and totally indirect lighting, and of these the latter results in the greatest measure of relief. In fact, recent investigations show that indirect lighting has the qualities of well diffused daylight, and causes practically as little fatigue of the eye, as the result of several hours' work, as daylight. The consequence is very greatly improved lighting conditions, which merely demonstrates that constantly increasing lamp efficiencies are an incentive to more and better lighting. The standards of today are far in advance of what they were a few years ago; today we believe in plenty of well-diffused light everywhere. Good lighting is cheap and yet the benefits it bestows are vast. Poor lighting is expensive even when obtained for nothing.

Four requirements for the artificial lighting of offices are now almost universally demanded: First, sufficiently low brilliancy of the lighting units to avoid uncomfortable and injurious glare in the eyes from the light source; second, the elimination, as much as possible, of the irritating glare of specular reflection from the glossy surfaces, particularly of books and papers;



Fig. 3—A Large General Office Illuminated by Indirect Fixtures

third, the elimination of sharply defined shadows, which make vision difficult; and fourth, the use of correctly designed, scientific and efficient lighting equipment.

The first three of these are the most important, while the fourth is usually essential to the attainment of the others. In this article, the writer will show how the application of indirect lighting meets these demands of good lighting.

Taking up the requirements in order, with indirect illumination the light flux of the lamps is directed to the ceiling rather than directly to the desks. A relatively large area of the ceiling in this manner is made luminous. The extremely brilliant tungsten lamps are completely concealed, and the only source of illumination visible to the eye is the low brilliancy ceiling. The enlarged effective source of light, the ceiling, produces a very diffuse illumination in the room. This minimizes the bad effects of glare, due to specular reflection, since even with very glossy surfaces, there can be no specular reflection when there are no specular sources of light. The more nearly perfect the diffusion of the light from the ceiling, the more nearly completely will glare from paper be eliminated. Deeply defined shadows are

annoying and harmful to the eyes for two reasons: the density of the shadow in contrast to the surrounding bright area makes vision difficult, and sharp edges magnify this effect. With indirect lighting, there are no sharp shadows. There are what might be called shaded areas, i. e., shadows with indiscernible edges. Shaded areas merge so gradually into the lighter areas that vision is comfortable, even with the most densely shaded areas it is possible to obtain ordinarily with indirect lighting. It has been demonstrated that a shaded area of 50 per cent density, with indirect lighting, causes no difficulty of vision, whereas with direct lighting, it makes comfortable vision impossible.

In order that the light flux may be directed to the ceiling in the proper manner, so that the first three requirements may be attained, it is necessary to design the reflectors scientifically for the special conditions encountered in indirect lighting practice. For economy, they should be efficient. Up to the present, the silvered mirror reflectors have been most widely applied for indirect lighting purposes. A complete line of reflectors, distributing and concentrating, for all sizes of lamps, and interior supporting equipment have been standardized for the lighting of interiors of all types and sizes.

Fig. 1 shows a typical opaque bowl, whereas Fig. 2 shows a

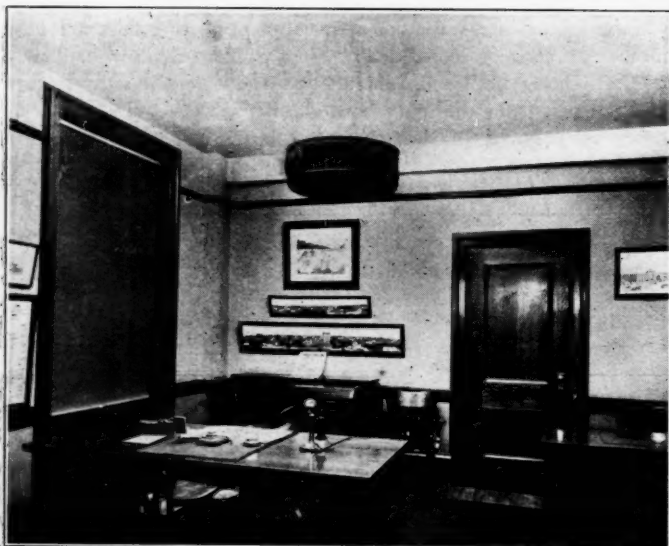


Fig. 4—A Private Office of the Canadian Northern at Winnipeg

luminous bowl indirect fixture. The latter requires some additional explanation.

There exists a considerable demand for fixtures of the semi-indirect type due chiefly to the ornamental features of a lighted glass bowl. However, semi-indirect is only modified direct lighting and does not have the advantages of low brilliancy, reduction of specular reflection and elimination of sharp shadows to as great a degree as is desirable. Therefore the luminous bowl indirect fixture has been developed. It produces truly indirect illumination, and at the same time has a softly illuminated bowl. In the fixture of Fig. 2, a small portion of the light flux of the lamp passes through the opening at the bottom of the reflector, in which the opal glass cup rests. This glass diffuser cup redirects the light rays against the side of the outer glass bowl. The diffuser cup is designed of varying thickness to insure a uniform illumination of the bowl. The percentage of light flux utilized for illuminating the bowl is so small that the brilliancy of the latter does not exceed that of the ceiling.

OFFICE LIGHTING.

As an example of general office lighting which satisfies the four requirements of good illumination, Fig. 3 is shown. This is not a railroad office, but the conditions are similar. The size is 150 ft. by 170 ft., making a floor area of 25,500 sq. ft., which is

illuminated by two hundred eighty-eight 100-watt tungsten lamps, equipped with silvered mirror reflectors, supported in inexpensive metal receptacles, hung from lamp cords. A remarkable uniformity of illumination is obtained, and the diffusion is such that glare from paper is practically eliminated and the shaded areas characteristic of indirect lighting are of such light density as to be barely noticeable.

What may be accomplished in the illumination of private



Fig. 5—A Large Drafting Room Illuminated by Indirect Lighting

offices by indirect means is illustrated in Fig. 4. The single central fixtures furnish ample illumination to all portions of the working area. The diffusion is good. The fixtures are ornamental and especially appropriate, since they have a monogram of the railroad incorporated in the design of the bowl. In fact, this is one of the important advantages of indirect lighting. The fixture may be designed to suit the fancy, but good lighting need not be sacrificed, since the same efficient reflectors and lamps



Fig. 6—The City Ticket Office of the Canadian Northern at Winnipeg

may be employed as are used with the most utilitarian and inexpensive fixtures.

DRAFTING ROOM LIGHTING.

The conditions to be satisfied in the illumination of a drafting room are somewhat more exacting than those ordinarily encountered in offices. The illumination must be exceptionally diffuse, and intense. Sharp shadows cause no end of trouble and eye-strain to the draftsman, making the exact setting of the T-square, triangle and other instruments very difficult, and

frequently causing errors which require laborious erasing. Therefore, the diffusion must be such as to completely eliminate any sharp deep shadows. The intensity must be sufficient to make it possible to see pencil lines through tracing cloth.

At the present time, the practical and economical means of producing a highly diffuse illumination is by making the entire ceiling of the interior the luminous source. This usually means a closer spacing of fixtures than is ordinarily required for office lighting. Fig. 5 illustrates a large drafting room in which some 40 draftsmen are accommodated, and which is lighted by means of twenty-eight 250-watt fixtures, equipped with silvered glass reflectors. This installation was planned to insure the best of diffusion. As a result, shaded areas on the plane of the tables are so very light and blend so gradually into the lighter areas as to be scarcely noticeable. The intensity of illumination on the table is eight foot-candles and proves ample for tracing.

All of these factors combined with the total absence of great brightness, contrasts, make the illumination most comfortable and satisfactory. From the practical standpoint, this installation has the advantages that every square foot of working space is adequately illuminated; changes in arrangement of office equipment entail no shifting or changing of the locations of lighting units; lighting units are overhead and out of the way, and lighting units are constructed with detachable arms permitting the reflector to swing free and facilitating cleaning, without the need of removing the lamp or reflector from the bowl.

CITY TICKET OFFICE LIGHTING

The general requirements for the lighting of a city ticket office are about the same as for general office lighting, with the possible exception that the lighting fixtures should be more ornamental and attractive in character. They present an appearance of elegance and unquestionably the lighting fixtures add to this effect. The cause of this appears to be the fact that even in the sale of transportation it is necessary to meet competition. Fig. 6 shows a ticket office of the Canadian Northern, in which the novel idea of incorporating the monogram of the railroad in the design of indirect fixtures has been applied. The fixtures are ornamental in appearance, harmonize with the interior and have a considerable advertising value. All of the above illustrations shown are night views, taken by the light of the indirect fixtures alone.

FREIGHT TRAIN HANDLING

An interesting paper on the proper handling of freight trains was presented at the January meeting of the Western Railway Club, by F. B. Farmer, of the Westinghouse Air Brake Company, St. Paul, Minn. Mr. Farmer presented a number of instructions for freight train engineers that were compiled after many years' study of the break-in-two question. In presenting these rules to the club Mr. Farmer spoke in part as follows:

The instructions are not self-enforcing, and habits are hard to

1965

RAILROAD

Conductor's Break-in-Two Report

Train Direction Date
Eng. No. Engineer

[illegible]

Indicate following causes by X, but also give full explanation in every case. In (1), (6) and (7) state how many cars from engine.

BREAK-IN-TWO				
CAUSE	1st	2nd	3rd	
(1) Burst Hose				
(2) Brakes Applied from Rear				
(3) Intentional Emergency				
(4) Releasing at Slow Speed				
(5) Start Before Brakes Released				
(6) Knuckle Slipped By				
(7) Coupler Unlocked				
Speed of Train?				
Was Air Cut in to Rear End?				
Were Eng. or Train Brakes Used?				

CONDUCTOR.....

Make report in duplicate. Mail original to Train Master and copy to Travel Engr.

AMERICAN PASSENGER SERVICE*

By E. E. CLARK

Interstate Commerce Commissioner

I congratulate you on the part you have played in building up the most comfortable and luxurious passenger service in the world, and when quality of service is considered, it is the cheapest in the world. The reckless freedom with which free passes were granted in the years gone by and the liberality with which cheap excursion fares were accorded, led some, perhaps many, to think that passenger service on railroads cost the railroads nothing, or that the cost was very much below the compensation received from those who were unfortunate enough to pay full fare.

The ticket scalper thrived, assisted in his transactions, in many instances, by representatives of the road. Even the clergyman's wife boasted of riding under an assumed name on a contract ticket belonging to another. The feeling seemed to be entertained quite generally that it was no wrong to defraud a railroad company.

And so grew up a general expectation that every exposition, convention, fair or other gathering was to be made a success through cheap railroad fares, while those who clamored most loudly for low, and still lower fares, spent their evenings marking up the prices on the things which they expected to sell to the excursionists, and filled the hallways with cots for the use of which they charged advanced bedroom prices.

The railroad business is necessarily done in a hurry. Nearly everything except safety is subordinated to expedition, and unfortunately sometimes safety is given second place. The questions that must be decided are multitude in number. Frequently they must be decided quickly to make room for others that are treading on their heels.

Our railroads were not built to serve sections of developed country or of established towns and industries. They have, as a rule, been projected into undeveloped territory upon the faith of the resources to be developed. Government, states, counties and municipalities often extended aid. The great part which railroads were to play in development of our vast domain was recognized and the advent of a new road was hailed with joy.

For a long time it seems to have been the generally accepted idea that the railroad had the transportation to sell and that, like a private concern, it could sell it to whom it chose and at any price it chose. Each railroad sought to encourage and assist development along these lines. Efforts, sometimes overdone, were made to afford the shippers on its line access to widely separated competitive markets. Naturally, discriminations grew up and having sprung into being, grew apace. Finally it became necessary for the government to put forth a restraining hand and to assume regulation to some extent of these arteries of communication upon which the industrial and commercial life of the nation depends, and which serve in every walk and phase of private life.

The railroads were created and exist by virtue of grants of authority extended by organized government. They never could have been built without the right of eminent domain. From the beginning they and their operations were subject to the constitutional provision that the jurisdiction of Congress over commerce between the states is plenary. Certain powers to be exercised within definite limits are delegated by the Congress to an administrative commission. There are many angles to the many questions that are presented, or that present themselves, in connection with the administration of the act to regulate commerce, and yet the fundamental principles of the law and its requirements are few and simple.

All charges for services rendered by the carrier must be reasonable and just, that is, they must be reasonable and just to the carrier and to the carrier's patrons. Unjust discrimi-

nation in any form or through any device is prohibited. There can be but one lawful charge for a given service and that charge must be collected alike from all for whom that service is rendered.

The reasonableness and justice of a charge and the discriminatory or non-discriminatory character of a charge, rule or practice are questions of fact upon which widely divergent views might, and probably would be, entertained by those whose interests are involved on either side. Hence the necessity for a form in which such controversies may fully be presented and decided. The Supreme Court of the United States has said that the uniformity required by law would be destroyed if the several courts in different jurisdictions were to pass upon findings of fact by the commission and that, therefore, the finding of the commission on a question of fact is not reviewable by the courts if there is substantial testimony in the records to support the finding.

In some quarters we are accused of being unduly friendly to the railroads. In other quarters, at the same time, we are accused of being bitterly hostile to the railroads. As is generally true of all declarations coming from extremists on either side, neither of these accusations is true and neither of them is in any sense accurate. The term and principles of the law and our own sense of justice and right under the facts disclosed by the investigations are our guides. In so far as we exercise our judgment, we do it in a judicial spirit, and having satisfied our conscience as to what is right, just and lawful, we are free from worry as to whether or not the decision will be popular.

Among the terms which are frequently used to describe man's dispositions or natures is the word "conservative."

If, however, you ask those who use that description to define it, you find that the word means one thing to one and another thing to another. There is a conservatism which means to get in a rut and stay there. There is a conservatism which means nothing but laziness. Another form of conservatism is nothing short of cowardice. And still another form of conservatism means to move along with and help the progress of the age approaching important and far-reaching changes in such a way as to reach the desired end by degrees, never losing sight of the goal sought, but avoiding precipitate steps, which, if taken, will work unnecessary destruction or do irreparable injury. I am that kind of a conservative and of such conservatives the Interstate Commerce Commission is composed.

Some of the extremists on one side suggest freely that a commission composed of others than experienced railroad officials cannot be competent to deal with these questions. And yet we have the satisfaction of knowing from the mouths of railroad officials that our work is and has been helpful in many ways to the railroads.

A captain of a steamboat on the Mississippi river found himself without a pilot. A native approached the captain and tendered his services as pilot. The captain asked him if he knew where the sand bars were, to which the native replied, "Nope." "Then," said the captain, "how do you expect to be of service as a pilot?" The native answered, "I know where they a'int." It is far better to expend energy trying to find where frictions and obstructions "a'int," than to hunt them up and then face the necessity of removing them. It was because, after years of trial of the plan of leaving all these matters in the hands of the railroads, it was found to be generally unsatisfactory and in some directions, intolerable, that the government employed a new pilot and drew some new charts for his guidance.

We desire to assist you and other officers of the railroads in making the railroad service of the United States the safest, the best, the cleanest, the fairest and the most efficient in the world, and to render that service to your patrons at charges that are as low as possible, commensurate, with fair and liberal returns to the owners of the railroads. We know full well that the American people demand and will demand efficient railroads. Every one knows that the railroads' revenue must come from selling transportation. Every one should be willing, and if he

*Address before the annual convention of the American Association of General Railway Passenger and Ticket Agents, Boston, September 16, 1914.

is not willing he can be compelled, to pay what the service is worth, including a reasonable profit. On the other hand, the railroad being a public servant, operating and existing under public franchise, has no right to expect, and should not be permitted to extort more than, a reasonable return upon the investment in the property devoted to the public service.

Some day we will have better understandings between the railroads and the public, between the railroads and the commission and between the commission and the public. When that day comes, it will be generally realized that much apprehension was based entirely on misunderstandings or on lack of understandings as to facts, intentions, inclinations and policies. We desire to do a constructive, not a destructive work. We hope to help in bringing about these better understandings.

Sometimes the whole school is deprived of recess because the teacher is unable to locate the guilty one or two scholars, but the great majority are good boys, nevertheless. All criminal laws are necessitated by a small minority who have criminal tendencies. All civil law is necessitated by a minority who are unwilling to do right or by the necessity for a common rule of action. A custom recognized by a community as representing the right and just course often becomes a rule of law. There is, in the railroad business, a law of competition that, in some ways, to some extent, is inexorable. The most direct way to the poor-house would be an effort to charge more on desirable competitive business than is asked by competitors. All railroads cannot be equally profitable to their owners. Differences of location, development, capitalization, management and physical condition all have their effect.

The effort of every loyal officer and employee is to make a success of the operation of his road. The law requires only that all patrons shall be accorded just and equal treatment under similar conditions of service rendered by the same carrier. If we can be helpful in bringing about conditions satisfactory to the great majority of their patrons, and satisfactory to the owners of those roads that are operated and capitalized upon sound business principles and not as stock-jobbing concerns, we shall feel that the world will be better for our having lived, and so shall be content.

MUDGE-PEERLESS VENTILATOR

The new Mudge-Peerless ventilator, which is made and sold by Mudge & Company, Chicago, is being applied on a large order for equipment now being built by the Pullman Company, at Chicago. This ventilator, as shown in Fig. 1, is box-like in

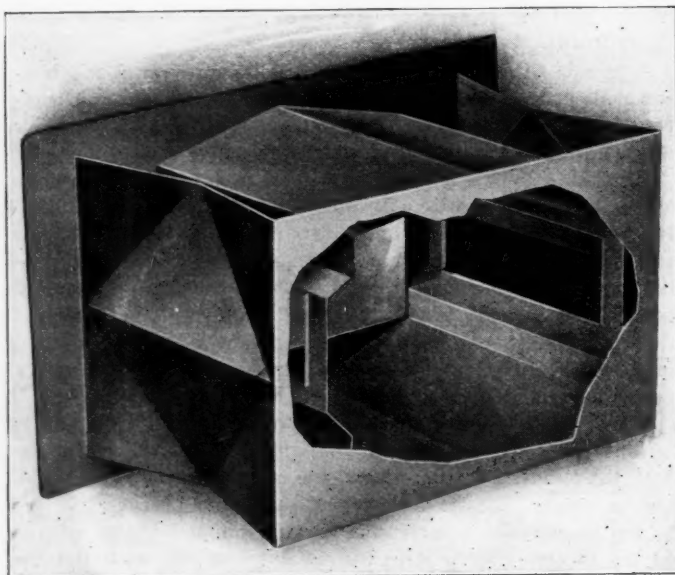


Fig. 1—Type 4 Mudge-Peerless Ventilator Showing Interior Arrangement

shape with the air ramming faces arranged transversely to the line of car travel. These faces are pressed in the form of a V at each side of the center line and at right angles to the ventilator opening of the car, the V shaped surfaces being inclined toward the exhaust outlets from the interior. The purpose of this formation is to prevent the air displaced by the ventilator from escaping around the side of the monitor type roof or over the top of the arch type roof.

The sectional view, Fig. 2, shows the action of the out-

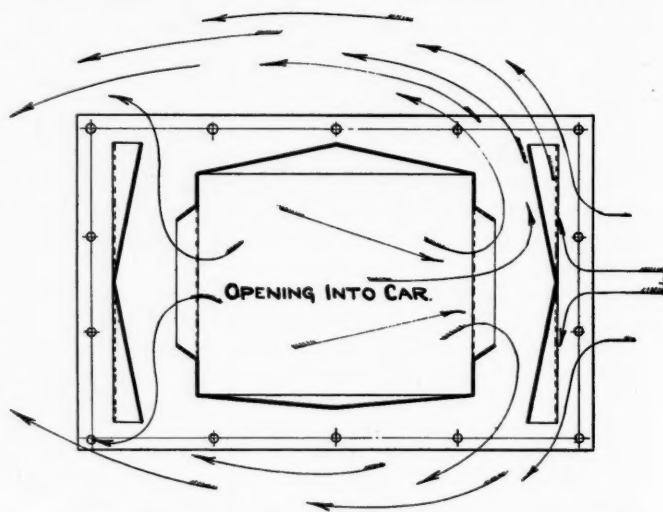


Fig. 2—Sectional View of the Mudge-Peerless Ventilator Showing the Action of the Air Currents

side air as it passes over and under the exhaust openings, drawing the vitiated air from the car body through the ventilator opening. The greater the velocity of the air passing over these openings the greater will be the efficiency of the ventilator. On the arch or turtle back car roofs the operating principle is identical except that the vacuum pockets are formed at the exhaust opening on the sides of the ventilators. An illustration of the ventilator for these types of roofs is shown in Fig. 3. The interior construction of this ventilator is hex-

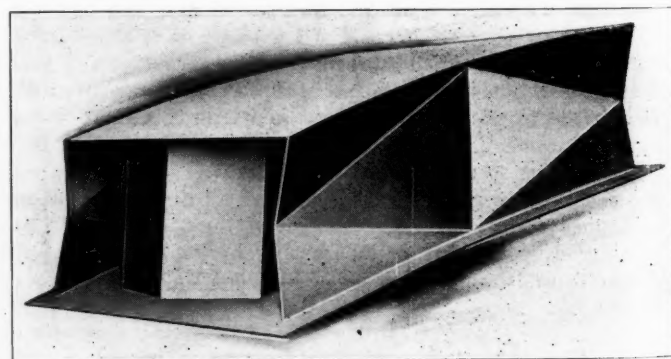


Fig. 3—Ventilator for Arch Type Roof

agonal in form, the rear end fitting tightly over the opening into the car while the front is solidly joined to the outside wall. Protecting exhaust outlets are provided for practically the full length on both sides directly behind the air ramming faces. The angular baffle plates which virtually form the roof prevent rain or other elements from dropping down into the interior, and the outside ventilator face prevents down drafts being caused by side winds. Two small openings are provided in the bottom plate to discharge the condensation in case the atmosphere contains a great deal of moisture.

The efficiency of this ventilator and the ratio of the exhaust to train speed is shown in Fig. 4. This chart was compiled

from anemometer readings taken on a wooden frame car with all doors and windows closed during the test. Tests have also shown a strong exhaust action with the trains standing, if side

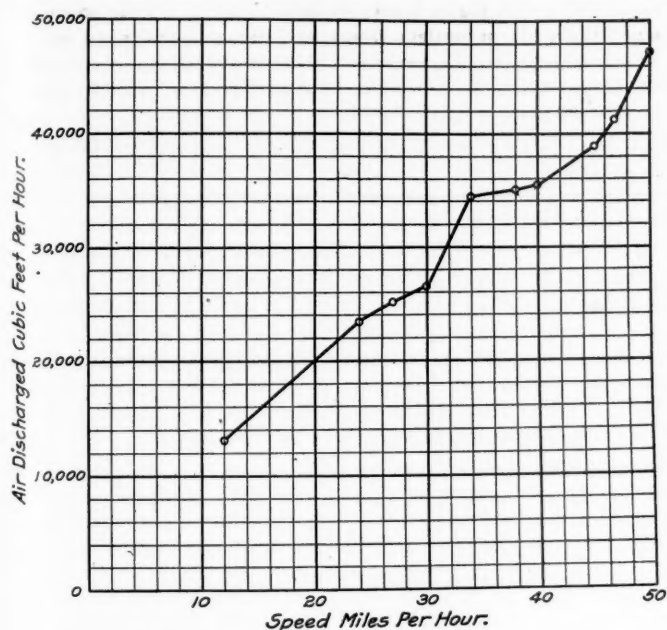


Fig. 4—Exhaust-Speed Curve of Mudge-Peerless Ventilator

winds are blowing from any angle. With a side wind blowing at a velocity of 4.25 m. p. h., an exhaust of 3,600 cu. ft. per

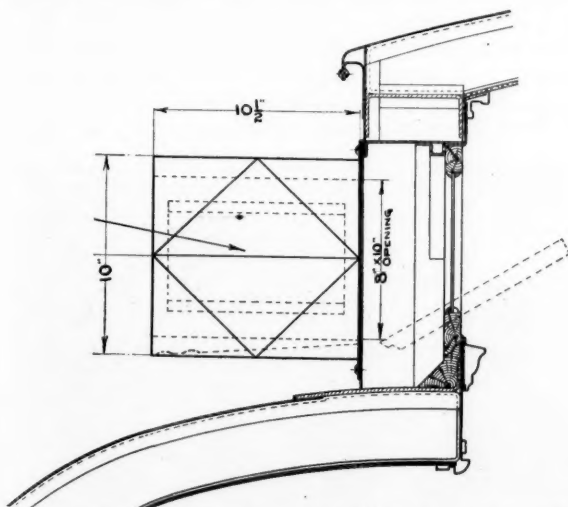


Fig. 5—Application of Ventilator to Monitor or Clerestory Roof

hour was obtained and at 7.5 m. p. h., 6,480 cu. ft. was obtained, the same car being used as mentioned in the running test.

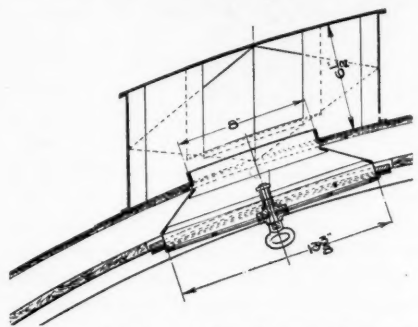


Fig. 6—Application of Ventilator to Arch Roof

The application of the monitor roof type ventilator is shown in Fig. 5. It is made in one standard size and design requiring

no soldering or fitting, as it is simply bolted or screwed to the screen board. The standard deck sash behind the ventilator is then used for regulating the flow of air. The arch or elliptical roof type ventilator is shown in Fig. 6. It is applied in a different manner, since it is made to conform to the curvature of the roof. A 1½ in. flange is provided for soldering it to the roof sheets to insure water tight connections. Ventilation with this type of ventilator is controlled individually by operating registers applied to the headlining beneath each ventilator.

Fig. 7 shows the application of this ventilator in conjunction

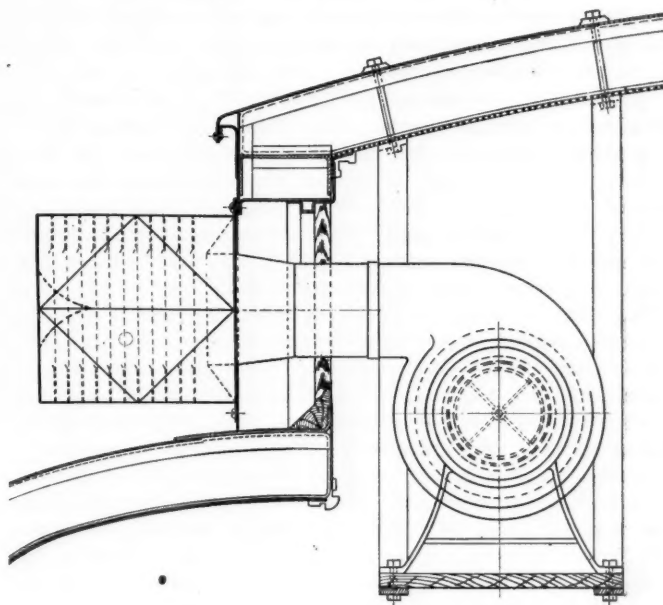


Fig. 7—Combined Ventilator and Blower

with an electric blower making a complete combination for the ventilation of dining cars which require the expulsion of fumes, smoke and kitchen odors while the car is standing. This type is provided with louvers as shown by the dotted lines. Its outside application to the screen board in the monitor roof car is the same as the type previously described. Simplicity has been carefully sought in both the construction and application of these various types of ventilators with a view to reducing the first cost and cost of maintenance.

ENGINEMEN'S EXPERIENCES*

Teaching the Fireman.—When you get a green fireman be fair to him, patient. Tell him what he can digest. Don't tell him about lap, lead, etc., as he cannot digest that just yet, but talk to him about the foundation of his work, which is: *How to burn coal and how to keep from burning coal*; in other words, an intelligent and economical system of firing. Impress upon him the importance of economy with fuel, as well as other supplies. Let him know that this coal is charged up to you as well as himself, and that you have an average coal record, and don't want him to spoil it; besides, he is wasting his energy if he puts in two scoops of coal when one is sufficient. Let him know that it is poor fuel economy to put in a fire at certain points, or under certain conditions, and then hear her "pop" for ten or fifteen minutes; let him know that it takes coal and water to keep a pop valve open, and both represent money which is being wasted and never will be recovered; let him know that fuel represents more cash than any other article the company buys,

*This is one of a half dozen articles to be printed in these columns, made up of useful hints to locomotive runners, which were written in connection with the recent prize competition. These will give not only different views of topics treated in the articles printed last winter but also interesting experiences not before touched upon.

except labor, and that he can save or waste much by the way he handles it.

When you take coal get enough, but do not heap it up on your tender so that you will lose a hundred pounds before you have gone ten miles. The company I work for coals about 1,000 engines a day. If there is 50 pounds of coal wasted from each one of these tenders each day, and the coal costs two dollars a ton to put on the tender, it will amount to twenty-five tons a day, which equals fifty dollars a day, or \$18,250 annually. This sum would pay the interest on \$450,000 bonds at four per cent. From these figures we can see the importance of keeping the fireman and the coal chute men, as well as ourselves, lined up for fuel economy. When you show your fireman these things he will make an effort to help you maintain your coal record.—*M. C. Glenn.*

A Sobering Experience.—I was called to double head passenger train 136 (at 8 p. m.) from Paducah to Princeton, Ky. Mine should have been the second engine, but to save the delay of switching the engines, mine was put in the lead. The train was about 40 minutes late. We received several orders before leaving, one of which read: "No. 136 engines 1,200 and 1,198 will meet No. 51 engine 16 at Clarks." No. 51 was a second class train, and as we only checked the register against first class trains we, of course, did not know how many overdue second class trains were on the road. On arriving at Clarks I whistled for the station and discovered a train in the side track, without signals. The fireman took his lantern and held it out the cab window to see the engine number of the train in the siding. He said it was engine number 16, therefore I was convinced it was train 51. I called for the block signal and got a clear block to Stiles, the next station. Just after passing the block office the second engineer whistled me to stop. He came over and asked me if the train in the siding was No. 51. I told him the fireman got the engine number and it corresponded with the one on the order. It was our custom to rely on the fireman, in case the siding was on his side, for this information. We came to the conclusion that the train referred to was No. 51, and proceeded to the next block office, where we found a red board and No. 51, engine 16, going into the siding for us. The train we met at Clarks was No. 71 engine 36, seven hours late. The investigation disclosed the fact that since we did not check the register against second class trains it was our duty to stop and ask the crew of the train we met if they were No. 51. Had this been done we should have remained at Clarks until No. 51 arrived; had it not been for the block signal a disastrous collision would surely have occurred. Both engine crews, also the conductor, were dismissed from service for their concern in the affair; but were all reinstated a year later.—*J. H. Glenn.*

Be Sure You're Right.—One rule that I have adopted is not to accept signals unless I positively know they are for me. It is no use to have a vigilant lookout unless it is an intelligent lookout. One New Year's night at C—— there was a passenger train on siding giving proceed signals as we were rounding the curve on fireman's side. The fireman called out: "All right; high ball." I knew no one had a right to give me such signals, as every train should have been in the clear; I was the superior train and had no meet orders. So I set my brakes in emergency and turned on the sand. I barely got stopped in the clear. The rear coach of their train was just on the frog, and in the rear-most part where, had I not stopped I should have struck, was a happy family of mother and children. The conductor was giving desperate signals to his engineer to pull in to clear, for he had no flag out. The engineer, however, had coupled into other cars on the siding and could not move. The thought of what might have happened has greatly influenced me in being careful and keeping a constant lookout, even where everything could be expected to be clear. Once I had an excursion train of over 1,000 passengers, and my engine struck a bad place in the track and made a double lunge. How the engine regained its equilibrium I cannot tell, but it held to the rails, and nothing happened except the effect upon me. Since then I must be satis-

fied the track is good for the speed I am making. The idea of putting 1,000 people down the embankment for the sake of a good run would be no pleasant memory. Thus a constant lookout to know where you are is requisite even where there are no obstructions to encounter.—*William A. Murphy.*

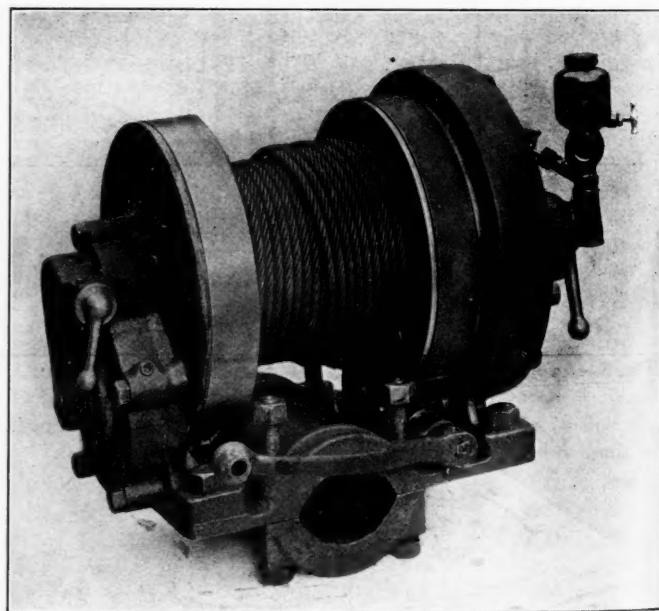
Give Whistle Signals with Care.—It is a great help in acquiring the habit of keeping a perfect lookout ahead to take care in giving correct crossing, station and block signal whistles, as provided by the rules. This is being done by only a very few engineers. To go on and on merely looking ahead and whistling now and then as an especially dangerous crossing is approached is the worst possible habit.—*C. H. Purcell.*

A Word to the Wise Is Sufficient.—As a young engineer I made a study of two or three older runners whom I knew to be successful. This, with a word of advice from a train director on one occasion—and it always pays to listen to older heads—has helped keep me out of trouble, so far. The admonition from the train director was very simply done. He stopped me one day and said: "Young man, you came into this yard too fast." I ran slower afterward. We are often tempted to disregard distant signals, but it is a bad habit to get into, and is sure to lead to trouble sooner or later. One may think the block is long or the grade is in favor of a short stop, and keep pulling the train. In the meantime your attention is taken up with other duties, when all at once you are face to face with a stop signal. In such a case you make a very rough stop at least, and possibly something more serious happens.—*Walter J. Probert.*

COMPACT PORTABLE HOIST

A portable hoist which has a lifting capacity of 1,000 lb., and weighs less than 300 lb. complete, has recently been introduced by the Ingersoll-Rand Company, 11 Broadway, New York. The base is arranged so that it may be bolted to a timber foundation or clamped to a circular member such as a column, shaft bar or pipe, to which it may be quickly attached.

The dimensions of the hoist are 21¼ in. by 16½ in., the height



Portable Hoist for Attachment to a Column or a Timber Foundation

being 20⅞ in. The drum is 6 in. in diameter with a space between flanges of 7 in. This will accommodate 700 ft. of ¼ in. rope or 450 ft. of 5/16 in. rope. The capacity of 1,000 lb. is obtained at a rope speed of 85 ft. per minute and a steam or air pressure of 80 lb. per sq. in.

The motor is of the reversible square piston type giving four impulses per revolution of the engine. There are no dead cen-

ters and the hoist will start in any position. The drum is mounted independent of the motor shaft and is operated through a clutch and gears. Safety is provided by a powerful worm-operated band brake lined with Raybestos. All moving parts with the exception of the drum are enclosed, thus insuring against accidents to workmen who might be in danger of catching their clothing in the gears.

Due to its light weight this hoist is adapted to a wide range of service wherever loads within its capacity are to be handled. In manufacturing and power plants it is very handy for moving light machinery, for hoisting ashes and other waste material, for loading trucks, etc. It is particularly suited for service in foundries in lifting flasks and ladles. In ship yards, railroad shops and on construction work it can be put to a variety of uses.

GENERALSHIP IN THE YARD

By E. E. SWERGAL

Executive Office, Southern Pacific, San Francisco.

The question of efficient results in a given standard of yard facilities and traffic, depends almost wholly upon the ability of the men directly in charge to conceive and skillfully execute plans of operation suited to current and contingent conditions in the yard. The active operations should be under the direction of experienced men who are capable of clear thinking and prompt action. Operating a yard is playing chess in another form. When conditions are complicated openings will occur that are opportunities if the yardmaster is sufficiently alert to recognize and take advantage of them.

The duties of the terminal trainmaster or general yardmaster should be administrative in character with a view of coordinating all activities. The condition of the power and its assignment, the employment of men, the administration of discipline, the accounting of records, and the management of the relations between the yard and the division at large or connecting lines, are matters of such importance that his thought should be given chiefly to them. In other words he should hold himself in reserve as a commanding general; sufficiently poised in mind so that he may correctly analyze all the phases of operation and dispose his men and materials accordingly. When operations become extremely complicated because of extraordinary conditions he should then take active charge and encourage and direct the men in such a way as will arouse enthusiasm and greater activity; there is an element of psychology in this as important as are the elements of a material nature.

One of the principal causes of failure in yard operation is a lack of a realization of the value of time. The failure of plans shrewdly conceived, in yard or other active operations, is often due to tardiness in putting them into execution. Briefly stated, a few minutes, or even a minute, wasted or made use of after plans are formulated may largely contribute to the success or failure of final results.

As all operations in the yard are interdependent, all employees should be cognizant in a general way of what the plan of operation will be during the shift. While night yardmaster at a junction yard in the southwest, it was my custom to go to the yard office early enough in the evening to enable me to study the transfer book and to obtain from the division despatchers a lineup showing the trains of all character that would arrive during the night. The freight traffic was largely manifest, of which there was a large volume, and there were several trans-continental passenger and mail trains in each direction that required considerable switching in addition to other coincident duties. After reviewing all information obtainable I condensed it and added thereto a tentative plan of operation for the night, showing particularly the standing of tracks. I made 10 or 12 sheets of this by manifold, giving copies to the engine foremen, the roundhouse foreman and the call boy, posting one in the yard office and keeping the original. By this method every man in the yard became generally familiar with conditions as a

whole, and it was easier for them to co-operate, and easier for me to harmonize them with the various problems.

For example when a crew working at one end of the yard heard signal calls or saw a train entering the other end of the yard at 3.30, the program indicated that, in all probability, it was Extra 1652 and that the men at that end were heading it onto track 4. They knew the character of the train and the relation of their duties to it if it was of direct concern. As I altered plans or decided upon new ones it was my practice to make everyone familiar with them as soon as I could. Closely allied with this feature, is the necessity for rapid communication throughout the yard. Telephones should be located at all strategic points. The possibility of good results to be obtained from rapid means of communication is so apparent that division officers are inexcusably short-sighted when they do not provide or recommend provision for such facilities.

There are many yardmasters and line officers too, who would profit themselves and the interests they serve if they would try to develop within themselves those personal qualities which largely made for success in the lives of men who have been historically prominent in successfully directing the operations of an organization of men. The yardmaster should learn the value of a kindly smile and an encouraging word at trying times. The men must be made to feel that their good will and co-operation is necessary for success in the yard, and in order to instill this in their minds they must be dealt with as men and fellow workers—not as mere wage earners, for in the yard, as in all other endeavors, men are dependent upon each other either directly or indirectly, regardless of position. When I was in charge of yard work, if occasion required me to write our officers regarding conditions, unless there were reasons of policy to the contrary, I took the interested men into my confidence, allowing them to examine letters and reports regardless of their educational qualifications. This pleased them, as it indicated I had respect for their opinions regarding the work. Occasionally, when conditions permitted, I would relieve a man long enough to enable him to go to the eating house or loiter about for a little recreation, or if a train was due in during supper hour I personally relieved the switch tender at the end of the yard so that he might eat with the crowd.

We cultivated friendly relations with the train and enginemen working into our terminal, and I personally resorted to political methods with a view of harmonizing them. It had been the rule, rather than the exception, that trains could not get into the yard because of congestion primarily due to the heavy traffic of the then prosperous times, but partially due to lack of studious effort upon the part of the yardmasters and the crews. We established the rule of taking the trains into the yard with the least possible delay, and generally with no delay, hurried cabooses to the assigned track near the eating house, and frequently, if the power along the road was dragging because of failures or heavy trains, we ran outside the yard and helped trains in. In return for this treatment, the road men often picked up cars or threw out bad order cars as conditions developed at such times as the yard crews were rushed with work. Whenever I was confident of the result, rather than wait for extras to come up and signal for switches or inquire by wire, I wired them briefly that certain switches would be open for them, and they were usually safe in inferring from this that an engine would promptly switch their caboose. I suppose Webster would define endeavors of this character as the gentle art of dissimulation, politicians would say it was practical politics, conservatives would say it was something radical, while cynics would apply to it a less respectful term. Whatever they may call it, the fact remains that history is replete with evidence that mankind generally is responsive to it in a generous measure. I believe that a tactful policy under conditions such as I have described will accomplish very much more for good than a policy of aggression, or in other words the yardmaster, or any man in charge of men, can obtain good results if he works with his men upon a basis of frankness and fair dealing.

INCREASING THE CAR LOAD*

By J. FRED TOWNSEND

Traffic Manager, National Tube Company

Rapid strides have been made during the last decade in rehabilitating railway property generally—reduction of grades, eliminating the curves, reconstructing the roadbed, replacing bridges and structures with larger and stronger material, and laying heavier steel rails, to care for the motive power and rolling stock that has been doubled in capacity, building second and third tracks and making extraordinary improvements in terminal yard facilities.

About 35 years ago, the maximum freight carload was 24,000 lb. The New York, Chicago & St. Louis Railroad was constructed at that time. It was built and equipped upon the most advanced ideas, which prompted some one to suggest its popular name, "Nickel Plate," and its new freight cars were all of 40,000 lb. capacity. This car would carry nearly double the load of the cars then generally in use.

All railroads throughout the country commenced enlarging their equipment, and during the next 10 years the 50,000 and 60,000 lb. capacity cars appeared. Today we have the 100,000 and the 140,000 lb. capacity cars, and it would be hard indeed to convince some people that the limit has not been reached.

However, when such a bulky commodity as coke can be loaded to the highest limit in the modern freight car, i. e., to 10 per cent. above marked capacity in the 100,000 lb. cars, it would seem to a layman that the unit of transportation should be increased, and instead of going through the slow and expensive changes of raising the limit 10,000 or 20,000 lb. at a time, a 200,000 or a 300,000 lb. capacity car should be adopted.

And it seems to me the railroads' opportunity to increase their net revenue irrespective of increased wages and expenses is here, and that they can accomplish this by following the example of the iron and steel manufacturers in increasing their facilities and then making the best use of them. This can be accomplished by doubling the capacity of freight cars, making the limit 300,000 lb. per car with six-wheel trucks. The gross weight of such cars loaded would not be as much as the new Mallet locomotives that are being very generally adopted.

During the last 20 years, the maximum freight car capacity has increased only 100 per cent., while the locomotive capacity during the same period has increased 400 per cent. The wide difference between the increase in the capacity of the locomotives as compared with the carrying capacity of the freight cars has necessitated the very long freight trains in order to give the heavy locomotives an economical load. This has resulted in an enormous increase in the maintenance of the small freight cars.

The question will naturally be raised as to why the railroads do not adopt a very much more substantial car of 150 tons capacity. The answer can be found in the records of all railroads in this country, which show that during the last ten years over 60 per cent. of the increased capacity of the freight cars has been unused in practice, while the extra cost of hauling the greater dead weight and the extra cost of maintenance have been incurred.

The fact is that everybody is complaining. Engineering experts who study these questions, as well as the railroad executives and operating officers, are surprised and disappointed because big engines and big cars have apparently failed to accomplish expected economies. Shippers whose business has been disturbed by periodical increases in minimum weight requirements are disposed to complain because the railroads disregard commercial conditions, which demand the small carload unit; while the railroad traffic managers, pressed on one side by their operating and executive officers to get bigger loads for the bigger cars, and on the other hand meeting shippers' protest against further increase in the minimum weight conditions of the tariffs, are discouraged and almost desperate.

The demand for a small carload unit would not enter into the shipment of such commodities as coal, coke, iron ore, grain, building material and other commodities which are sold and handled in large quantities, under conditions which would make the shipper indifferent as to whether they moved in carloads of 20 or 100 tons, assuming the cost of loading and unloading to be the same.

The attitude of the shippers toward the big carload does not depend entirely upon the capacity or the cost of loading or unloading, but rather upon the way in which it is bought and sold—whether sold by a man who has a large quantity to sell or bought by a man who wants a large or small quantity—the desire of the retail merchant to get the minimum carload of flour, because of the original investment, interest in insurance cost of carrying the stock, depreciation in quality, chance of falling market, and so on. The same thing is true of sugar, canned goods, beans, and everything in the list of goods handled by small jobbers or very large retailers. In fact, when you get outside of the limited list of very large jobbers, nearly every buyer wants the smallest quantity on which he can get the minimum delivered price. If the railroads expect such people to buy a large quantity and co-operate in the loading of cars to capacity, their freight tariffs must not only offer indemnity for the greater cost of handling such larger quantities; and to get complete co-operation on the part of shippers, the tariffs should offer some material inducement to trade in large quantities, thereby loading cars to capacity.

SHOULD NOT THE "WHOLESALE" PRINCIPLE APPLY?

It would seem that any remedy must involve some practical application of the wholesale principle to the transportation business; and for the same reason that the price paid for the most commodities is in the inverse ratio to the amount purchased, the railroads should, within the limit of their maximum car capacity, give the lowest rate to the man who makes the largest shipment.

The freight tariffs of the European railways are based on the wholesale principle, all rates, generally speaking, being graduated according to the quantity shipped. The American railroads have made what seems to be the mistake of limiting their rates to two base units—the carload, which is anything more than 36,000 lb., or whatever may be the prescribed minimum weight, and the less-than-carload, which is anything under 36,000 lb. and within the limit of the money charge which would be made for the minimum carload shipment.

To have only the two units for rate making, the carload lot and the less-than-carload lot, was not advisable even 25 years ago, when the minimum was 20,000 lb. and the carload rate was applied upon relatively small quantities. Under the present day conditions, when the shipper is expected to furnish full loads for cars of 40 and 50 tons capacity and requested to load not less than 18 or 20 tons in order to get the carload rate, there is still less justification for the failure of the carriers to work out some graduated scale of rates, according to the weight of such consignments, or in some other way make freight tariffs which would permit the forwarding of any shipment, however large or small, at a rate which would bear some consistent relation to the cost of service.

Grain tariffs generally provide that the rates will apply only when cars are loaded to capacity. In other words, the minimum weight is the marked capacity of the car in case of corn, wheat, etc., while the minimum weight for oats or other bulky grain is based upon cubical capacity of cars used. Railroads are not building cars of capacity less than 80,000 lb. Therefore a shipper could not get the car load rate, which we will say is 15 cents per 100 lb., unless he forwarded 80,000 lb., or is able to get a smaller car. But it is difficult to get cars of 60,000 or 70,000 lb. capacity, and almost impossible to get cars of capacity less than 60,000 lb.

The question has been raised as to why the present method of rate making is considered better than the European method, or if not better, why the European method is not to a greater or

*Abstract of a paper presented before the American Iron & Steel Institute, New York City, on May 22, 1914.

less extent observed in making American railroad tariffs. The average railroad traffic manager is usually obliged to say that any tariff which would fairly meet requirements of small carload shippers, and offer due encouragement to those who would load cars to capacity, would be altogether too complicated. And the same traffic manager is also likely to say that it is difficult, if not impossible, to change rules and practices which have obtained for long periods of time and on which business has been organized and built up. He will further say that the graduation of rates on carload shipments according to weight loaded, could not be made without loss of gross revenue, because the carload rates are now subject to minimum weights, which usually represent about 50 per cent. of the average car capacity, and any attempt to increase the rate on small carload shipments would meet the protest of shippers and the veto of state and federal authorities. It would be possible to encourage maximum loading only by offering rates considerably less than the present carload rates. And since the railroads are now able, in one way or another, to get a large proportion of their carload shipments on a capacity loading basis, any attempt to graduate the rates on a consistent basis would certainly result in a loss of revenue.

Nevertheless, this principle has been to some extent recognized in railroad freight tariffs in this country. The most numerous examples of such rate making are found in tariffs of the so-called transcontinental roads. In the case of canned salmon and several commodities which are commonly carried eastbound, these roads make two rates. For example, the rate on canned salmon from Seattle to eastern common points is 85 cents, subject to minimum weight of 40,000 lb., and 70 cents, subject to minimum weight of 60,000 lb.

A similar differentiation of rates according to minimum weights has been made to some items in the westbound tariffs of the transcontinental roads with result that nearly all of the tonnage moves under the lower rate, subject to the higher weight, thus proving that shippers can and will accommodate themselves to increased minimum weight requirements if there is any incidental saving in the rate.

Except as the trainload unit may be employed, the carload unit is the only useful basis for estimating railroad transportation cost. When any attempt is made by the railroads to measure the net revenue arising from any traffic, they consider the earnings per car. If the load is 80,000 lb., the revenue will be twice as much as it would be if the load was only 40,000 lb. But who will say whether it costs more to transport the 80,000 lb. load, and how much more?

Engineering experts have furnished various rules for determining the tractive resistance, or what is commonly called "the drawbar pull" of cars carrying different loads. With knowledge of conditions as to grades, curvature, wind resistance, and so on, these experts can estimate the weight resistance, wheel friction, and all other items to be considered in determining the relative cost of moving a car loaded with 20 tons of freight, and the cost of moving the same car loaded with 40 tons of freight, between two given points under the same conditions. But it has been impossible to state any rule or formula which may be commonly used with confidence. We know only in a very general way that the cost per ton of transporting freight in cars loaded to capacity is very much less than the cost per ton of carrying the same freight in cars half loaded.

Consider what the shippers of the Pittsburgh district generally could accomplish in the way of creating a car supply by increasing the average load per car. Based on the total Pittsburgh district tonnage for the year 1912, an increase in the average carload of, say, two tons per car, would have resulted in the same tonnage moving in 409,524 fewer cars.

While the Pittsburgh district tonnage is merely used for a basis of computation, there can be no question but that even a more remarkable showing could be made in increasing the average carload throughout the country generally, if the railroads would bring this subject before the shipping public. Shippers and consignees will be convinced that it is to their best interest to go to additional expense, if necessary, both in loading and

unloading heavier cars, when they are made to realize that it means increased car supply; for there is nothing that interferes more with the general business of the country than a shortage of cars.

A SUGGESTION TO RAILROADS

It seems to me that the traffic officials of the railroads have it in their power to improve the situation in a very simple manner, by issuing graduated commodity rates based on increased carload minimum weights, i. e., commence on the present basis of rates with the present minimum weight and have a table of higher minimums with lower rates.

For instance, from Seattle to New York, the table of rates on lumber could be made as follows:

Minimum weight	Rate
20,000 lb.....	\$1.25 per 100 lb.
30,000 lb.....	.85 per 100 lb.
40,000 lb.....	.75 per 100 lb.
60,000 lb.....	.60 per 100 lb.
80,000 lb.....	.50 per 100 lb.

The present freight rate on lumber from the Pacific coast to New York is 75 cents per 100 lb., with 25 or 30 minimum carload weights that are based upon the cubical capacity of the car. The same method could be used by establishing graduated rates in the opposite direction, westbound. Take, for instance, the iron and steel commodities that are produced in large quantities in the East and needed along the Pacific coast.

Objections might be raised to the large number of carload minimum weights and various rates. To avoid this, the suggestion has been made by Henry S. Prichard to use, for instance, the same minimum weights and basis of rates that are in effect today, charging for the excess weight over the prescribed minimum carload weight, say, one-fifth of the tariff rate. Applied to the above example, under the Prichard method, \$1.25 per 100 lb. would be charged for the minimum of 20,000 lb., and 25 cents per 100 lb. for the excess over the minimum, and the total resulting revenue would be the same as in the graded table above.

A similar schedule of graduated rates could be established between any other points and upon any other class of traffic, and perhaps even better examples could be made with flour and grain rates that are in effect today.

TRANSCONTINENTAL TRANSPORTATION

All will agree that the method of making all-rail rates to the Pacific coast must be entirely changed if eastern manufacturers are to enjoy any share of the Pacific coast trade. To see this clearly, it is only necessary to bear in mind the recent large reductions in import duties and ocean freights, and the near approach of the opening of the Panama canal, which will, if present all-rail rates of freight are maintained, shortly deliver the entire business to British, German and Belgian manufacturers. Very much of the business has already been delivered to them because of the causes named. But it seems to me that the railroads, by promptly adopting some such plan of making rates as I have illustrated, can hold the business for themselves and for American manufacturers and do so at a substantial direct profit. This will further have the beneficial effect of equalizing their traffic east and west.

Some people may reach the conclusion that this is a drive to lower freight rates. But if it does lower rates it spells increased net earnings for the railroads, because every buyer in the land would specify the very largest carload in every instance, hence heavy loads. The result would be an actual saving in freight costs to the shippers that would compensate them for building up the heavier loads, and, at the same time, result in a marked increase in net earnings to the railroads.

With a graduated schedule of rates to select from, the low minimum carload shipments would become the exception, and the small capacity cars would disappear entirely. There would be three of the present minimum carload shipments forwarded in one car.

To fully appreciate the value of this saving in equipment, consider the following items:

First. The more desirable traffic to the railroads means lower

cost of transportation and naturally lower basis of freight rates.

Second. The saving in switching expenses, avoiding congestion in the freight yards and expediting the movement of cars, both for the shippers and the railroads.

Third. The value to the railroads in having an enormous increase in the car supply without the investment of any additional capital.

Fourth. The actual saving to the railroads, in dollars and cents, of the cost of a large number of cars, and the additional saving in operating and maintenance expenses, and the valuable track room in terminal yards. The heavier loading of cars will, in itself, really create increased terminals without the expenditure of a dollar by the railroads.

For months past we have all, I have no doubt, been watching with a great deal of interest the effort being made by the railroads generally to secure permission from the Interstate Commerce Commission to charge rates of freight that would give them sufficient revenue to operate their properties properly, and give the public the service that the public is entitled to, and demands. The strongest argument that has been made in opposition to the views of the railroads has brought forward the fact that the railroads could themselves largely increase their net earnings by the practice of various economies. And while I am not here to argue the rate case pro and con, I know of nothing that has been advanced in the field of economics that would do more to stop the present waste of our transportation facilities, than some such basis of rate making as enumerated above. There are untold values of railroad equipment today that are not being utilized to their capacity or greatest efficiency because we are bound by an antiquated system of rate making.

Seriously, I believe that the members of the American Iron and Steel Institute can do a great deal toward greater car efficiency by taking up the campaign for heavier loading of cars that will naturally encourage the railroads to build cars of very much heavier capacity, and I ask your co-operation in this movement, which, viewed from the standpoint of transportation, commerce, economies or efficiency seems to spell progress.

DISCUSSION

Delos W. Cooke, vice-president and general traffic manager of the Erie, discussed this paper as follows:

The movement toward cars of larger capacity undoubtedly originated in a desire to economize in transportation cost. Whether this was the desire of the prosperous line to increase its profits or was forced on the weaker lines, as a clever lawyer once said, "By the scourge of crass necessity," is of little consequence; it was sound business policy.

With it, however, came the building of heavier power. The old-style car with the wooden underframe and weak draft gear connections passed out because it would not stand the strain of the hundred-car train. The car that took its place is of steel or steel frame construction. The most natural thing in the world was to increase its capacity since the structural strength was there of necessity.

If the master minds of the earlier day who decided upon and built the large car were disappointed that the carload did not increase in proportion to the increased capacity, the truth may here be stated that when they built the large car they probably gave commercial conditions little or no consideration. They knew that if they had the car so constructed that it could be hauled in the longest possible train, somebody would be very busy trying to find a load for it no matter what its capacity might be. This had to do chiefly with the box car, which probably sees the greatest variety of service, but encouraged by the co-operation of shippers we are now building cars of 70 tons capacity for the iron and steel trade without a block of wood in them. The railroads must carry everything from feathers to pig lead, and, as Mr. Townsend says, commercial conditions—and it might be added the character of the commerce—govern the load.

The car of large cubic capacity is of great service to the railroads in enabling them to increase the load of light and bulky articles, which the varied character of commerce compels them

to transport. It is practically impossible to secure a rate that will compensate for the light load on such traffic, but large cars will do much toward helping the situation in cases like:

	Average carload		Average carload
Automobiles	12,000 lb.	Agricultural implements...	33,000 lb.
Excelsior	20,000 lb.	Apples	26,000 lb.
Hay		Grapes	
Straw	22,000 lb.	Cabbage	29,000 lb.
Cantaloupes		Tobacco	
Rags and waste paper....	23,000 lb.	Oranges	28,500 lb.
Sisal	24,000 lb.	Onions	30,000 lb.

Progress is being made, however, in securing heavier loading. On one trunk line the average loading on brick is 70,180 lb., where the average minimum is 40,000 lb., and on the same line the average on wheat is 71,463 lb., the average minimum being 60,000 lb. The average load of iron and steel on another trunk line which handles most of that traffic is 60,000 lb., showing that there is still room for improvement.

If the carload unit were the universal basis of commercial transactions it might be less difficult, even in these times, to endorse Mr. Townsend's suggested basis of scaled rates for increased loading; but the fact that in all big business the carload unit has little to do with the basis of sale, makes it seem that the already unjustifiable spread between carload and less-than-carload ratings is as far in rate reduction as the railroads can be expected to go.

There can be no doubt of the soundness of Mr. Townsend's suggestion, that the scaled rate would induce heavier loading in many lines of traffic, but this is by no means free from danger, especially in the mixed carload. The Supreme Court has decided that a railroad has no right to question the ownership of the goods in the application of carload ratings. This is developing the so-called forwarder or scalper to an extent that is positively startling, and it must be in some way corrected. Recent instances show that these forwarders by consolidating less-than-carload shipments of miscellaneous merchandise into carloads, and thus securing the carload rate, have a margin of 45 cents per 100 lb., New York to Chicago, to divide with their patrons, making the railroad losses in many instances, as compared with their less carload rates to which they are entitled, over \$100 per car. The loading secured by the forwarders is more than double the average merchandise loading of the trunk line railroads, and the scaled weight basis applied to this traffic would simply increase the profits of the scalper and diminish those of the railroad. In this situation we have the anomalous condition of the railroad being required by law to publish and maintain rates for certain quantities, while the scalper with no investment and absolutely no responsibility is able to make rates as much as 50 per cent. less than the railroad over the same line and divide his profits with the shipper. This, too, under a decision of the Interstate Commerce Commission sustained by the Supreme Court.

The four items of value to the railroads which Mr. Townsend gives as resulting from the saving in equipment are convincing, except as to the first, in which it could not be wholly agreed a reduction in rates naturally followed a reduction in transportation cost.

In the steel business it has been said that there is a bottom but no top. The top on railroad rates is so securely fastened as to make it absolutely necessary to keep any margin of profit intact, if any such thing exists. The railroads cannot afford to reduce their rates even to secure heavier loading, and we must appeal to you to continue your good work in helping us in this direction if for no other reason than it is to your interest to do so.

It needs no argument following Mr. Townsend's paper to show that we must get the heavier load, and it is likewise true that the heavier car must be built for the heavier load. The great importance to the iron and steel industry of co-operation in this direction is almost too manifest to permit suggestion, but let it be said that every part of the heavier car, from axle to running-board, calls for an increased use of metal and that metal is steel. The heavy train and the big car call for the big locomotive. A line I know has just built one containing 853,000 lb.

of steel, which is capable of hauling a train of loaded freight cars four and three-quarters miles long, *if the cars would stand it*. Bridges have been strengthened to the extent of 30 per cent. axle-load capacity in the past ten years, which means that most of them have been renewed with steel.

Heavier rails and fastenings call for steel, steel.

Have we not found in this, therefore, the ideal basis for co-operation between our great industries? You have only to do your part. We *must* do ours.

NEW D. L. & W. FREIGHT STATION AT UTICA, N. Y.

The new Delaware, Lackawanna & Western inbound freight house at Utica, N. Y., embodies a number of advanced features of design for this type of building. It is 51 ft. 4 in. wide and 402 ft. 4 in. long, the frame work being of reinforced concrete with the panels filled in with brick. The main floor contains a freight room 382 ft. 8 in. long and 48 ft. wide, and a public lobby, cashier's office, and locker and lunch rooms occupying 20 ft. of space for the entire width in one end of the building. A second

The freight doors along both sides of the building are counter-balanced and are equipped with the Wilcox horizontal bearings. They are 10 ft. wide and 8 ft. high, and are covered by canopies 9 ft. 4 in. wide, consisting of a steel frame supporting a concrete slab. In order to improve the lighting in the freight room the roof is raised high enough to provide for a row of Lupton steel sash above the canopy on each side of the house. Ventilation is also secured by the installation of the Pond operating device for a portion of the sash. The higher roof allows the use of a deeper and correspondingly lighter steel roof truss. The clear height under the trusses is 10 ft., and their depth at the walls is 6 ft., this being increased by the roof pitch of $\frac{3}{4}$ in. per foot to 7 ft. $6\frac{3}{4}$ in. at the ridge. Timber purlins over these trusses carry the 2 in. plank roof which is covered with a surface coat of tar and gravel. The roof on the office portion consists of a concrete slab carried by reinforced concrete beams and girders. An 8 ft. concrete platform on the track side is carried on the house foundation and a 12 in. wall under the outer edge.

The freight room is divided by three fire walls of brick with tin covered doors equipped with the Wilcox fixtures. The building is fitted with both gas and electric light. The offices on the



New Inbound Freight Station on the Lackawanna at Utica, N. Y.

story covers 82 ft. 4 in. of the length, containing private offices for the freight agent and the chief clerk, a general clerk's office, and a file room. A basement is provided under the office portion of the building, in which the heating and lighting plants are located. A new house, identical in most of the details, has also been built in Syracuse, N. Y.

The basement walls are of concrete, 1 ft. 8 in. thick with spread footings to keep the bearing pressure on the soil within the allowable maximum. The walls above the main floor level are 1 ft. thick with pilasters at 20 ft. intervals. The outer surface of the concrete walls is bush hammered. A timber floor is used in the freight room laid directly on a cinder fill. It consists of a $\frac{3}{4}$ -in. maple wearing surface on creosoted planks running diagonally over creosoted sleepers. The wearing surface will be replaced when it has worn down $\frac{1}{2}$ in. This floor is pitched $\frac{1}{4}$ in. to 1 ft. towards the street side to assist in moving freight. A scale is provided in the floor of each bay. A concrete floor is used for both the first and second stories in the office portion of the building, interior column supports being provided in line with the pilasters.

second floor are well lighted by windows on three sides and are ample in size to care for all requirements. The record room is fitted with cases in which can be filed all records for seven years. A dumb waiter connects the two floors for the transfer of bills, receipts, etc., between the clerk's office and the cashier. The portion of the freight room under the offices is kept warm in the winter by the steam pipes under the platform on the car side and perishable freight is stored in this bay.

Adequate fire protection, viz., a hydrant and hose stored in a rack, is provided in each bay. Toilets and wash room are also installed for the freight handlers, on the house floor, and separate toilets, locker rooms and lavatories for the male and female help in the offices.

Three tracks parallel the house and team tracks with a total capacity of about 74 cars join one end of the house. The driveways between the team tracks and along the house are paved with granite blocks.

This freight house was designed and built under the general direction of G. J. Ray, chief engineer, F. J. Nies, formerly architect, and C. E. Wickham, division engineer.

RAILROADS EARN LESS FROM MAILS THAN FROM EXPRESS

Ralph Peters, chairman of the railroads' committee on mail pay, commenting on the report of the joint congressional committee on railway mail pay, recently published, wherein it is found that the railroads are better paid for serving the express companies than for serving the government in carrying the mails, says:

"The committee has reported to Congress that the mail service costs the railroads more and yields them less than the express service; that the comparison of mail and express receipts furnishes no basis to support the claim that the railroads have been overpaid for carrying the mails, and that the express payments have been responsive to the growth in traffic, while the mail payments clearly have not.

"The evidence before the committee showed that in a typical passenger train the express car earned \$6 while the mail car was earning \$5.

"The report says:

"Railway employees help to load and unload mail but not express matter, except where employees are jointly paid by the railroad and express companies. Express cars are cheaper than equipped mail cars. Railroad companies are liable for injuries to mail clerks but not for injuries to express employees. Express matter is handled at all times by express company employees. A railroad company not only handles the mail at and in stations, but in a great many instances bears the expense of transporting mail between the station and the postoffice. Mail must be carried on all trains, including the fast trains, while express matter is limited in frequency and speed of service.

"Postal employees are carried free on railroads while on official business, whether connected with railroad mail service or not. Transportation of express employees is reciprocated by free services rendered by the express companies for the railroads.

"Certainly there is no warrant in the oft-repeated assertion that the government is being robbed in its mail payments by comparison with what the express companies pay. There has been an amazing amount of reckless assertion on this subject."

V. J. Bradley, general supervisor of mail traffic of the Pennsylvania Railroad, presented a comparative statement of the differences between the two services. This, says Mr. Peters, shows the following facts:

DIFFERENCES IN THE REQUIREMENTS IMPOSED UPON THE RAILROADS

Subject	Post Office Department	Express Companies
1. Contracts	Post Office Department seeks to stipulate all the conditions and reserves the right to change many of them at will without consultation.	Express companies formally contract with railroad companies, the railroad companies being the controlling party and reserving important power.
2. Differences	Differences with Post Office Department not subject to arbitration as in England.	Arbitration would be naturally resorted to, and many contracts so provide.
3. Pay adjustments...	Post Office Department weighs the mails and adjusts the pay every four years and practically gives itself a rebate on the increased business for the intermediate period.	Express pay to railroad companies is automatically adjusted on the actual daily business.
4. Transp'n facilities.	Post Office Department demands unlimited frequency—practically on every train.	Express companies strictly limited to certain train movements.
5. Car space.....	Post Office Department requires excess car space for sorting the mails en route far beyond what the load requires.	Express traffic loads more compactly and therefore more economically.
6. R. P. O. cars.....	The railway post office cars are largely occupied by pigeon-holes and iron racks and are not available for general railroad use when not occupied by the mails.	Express traffic does not require specially equipped cars. Baggage cars serve the purpose and are available for general use.

Subject	Post Office Department	Express Companies
7. Construction; maintenance	The law requires steel railway post office cars, and the Post Office Department prescribes the interior fittings and special sanitary fixtures and requirements. Light (electric or gas) is especially expensive, so much being needed. Hence high cost of construction and maintenance.	The express company accepts the cars that the railroad company can supply and is content with ordinary service and very little artificial light. Hence low cost of construction and maintenance.
8. Loading	The railroad companies pay for loading and unloading mail cars.	The express companies bear this expense themselves.
9. Employees in cars.	Probably three or four times as many railway postal clerks are carried for sorting the mails en route. The railroad companies are responsible for their lives and safety. Substantial amounts are paid annually on account of accidents.	Express companies relieve the railroad company from any responsibility for injury or death of their employees.
10. Station room....	If the Post Office Department requires room for transfer clerks at stations, the railroad companies provide them without special charge and also furnish them and supply heat, light, iced water, etc.	The express company pays rent for any space occupied in stations, or builds its own structures.
11. Messenger service.	Post Office Department requires railroad companies to carry the mails between the station and the post office at many places.	No such service is performed for the express company.
12. Reciprocal service.	Post Office Department makes no concessions to railroad companies.	The express company usually carries free, money, tickets, valuable packages, etc., for the railroad company, not only on the contracting railroads, but also over the connecting lines over which the express company operates.
13. Mail cranes.....	Post Office Department requires railroad companies to erect and maintain these devices at several thousand places throughout the country.	No such requirement exists in connection with the express service.
14. Advance loading.	Post Office Department expects cars to be placed in terminals several hours before leaving time for distribution in addition to loading, and thereby avoids renting space in post offices for that purpose.	Express companies own or rent their own unloading or loading warehouses and pay all costs and expenses.
15. Handling traffic...	Post Office Department pays nothing extra to train baggagemen nor to station baggagemen for handling the mail traffic.	Express company contributes to the salary of railroad employees acting in the joint capacity.
16. Loss or damage..	The Post Office Department has not, so far as known, asserted the claim that the railroad companies are pecuniarily responsible for the general mails, but has imposed fines to cover the loss of registered mail or of mail bags or locks lost or destroyed as in railroad wrecks.	Express company accepts all responsibility for loss or damage to express traffic.
17. Penalties	Post Office Department imposes fines and deductions in many cases, some of which are dependent upon the idea that the particular mail (perhaps relatively unimportant) must be given preference over passenger and other traffic.	Express company accepts the railroad company's standard of efficiency and has no superior privileges of supervision.

PROTECTING THE FORTH BRIDGE OF SCOTLAND.—Special precautions are being taken to guard the Forth Bridge, and passengers are not allowed to take any hand luggage in the compartments while crossing the bridge.

General News Department

In connection with the buy-a-bale-of-cotton movement which has been discussed in the newspapers, the Nashville, Chattanooga & St. Louis has announced that it will buy 125 bales of cotton at 10 cents a pound.

On September 1 the Illinois Central acquired from the Central Fruit Despatch, a subsidiary company, all its refrigerator cars and such cars not already lettered "I. C. R. R." will be relettered, to be operated hereafter by the railroad company direct.

The legislative committee of the Order of Railroad Conductors in Pennsylvania has recommended an employers' liability law to the legislature which will meet next January. The legislative committee of the Brotherhood of Locomotive Engineers has declined to take any action.

The diary of a certain general superintendent shows that in one year he spent 101 days conferring with railroad commissions, committees of organized employees, city and town officers and officers of the courts; he was traveling over the road 155 days and spent 109 days at headquarters transacting business connected with the administration of the railroad.

The railroad companies have formally accepted the city ordinance governing the project for a new \$65,000,000 union station and yards in Chicago to be used by the Pennsylvania, the Burlington and other roads, and to be completed within five years. In return for closing certain streets and alleys the city will receive \$825,805 from the Union Depot Company.

On Tuesday of this week the Henry M. Flagler, the ferry which was built for the Florida East Coast for service between Key West and Cuba, was launched at the Cramp ship yards at Philadelphia. The ferry is built to accommodate 30 freight cars. It is 351 ft. long with 57-ft. beam. Its speed when loaded with 2,300 tons will be, it is estimated, about 12 knots.

In the derailment of passenger train No. 2 on the Alabama Great Southern near Livingston, Ala., on the morning of September 18 about 3 o'clock, eight passengers and two trainmen are reported to have been killed and 30 persons were injured. The wreck was due to a misplaced switch and the reports indicate that the switch had been tampered with. An investigation by the Interstate Commerce Commission has been asked by the railroad company.

The engineer and conductor of a Philadelphia & Reading train were killed by suffocation when the train stopped in a tunnel near Phoenixville, Pa. The train had run down and killed a woman at the entrance to the tunnel and was brought to a stop by the emergency application of the brakes, and the train crew and some of the passengers got out, but were overcome by smoke, and when a rescue party were later able to go forward they found the engineman and conductor both dead.

General Manager C. W. Galloway has issued a circular to the effect that telegraphing be done only where necessity requires the use of wires. Next to train orders, such messages as relate to car service to shippers and other messages of equal importance must take precedence. Abbreviating proper names is suggested. On the Baltimore & Ohio 30,000 messages are handled each day and the importance of being brief is obvious. As a substitute for the telegraph the railroad has adopted a "mailgram" service, messages of this character being handled by train with great despatch.

The New York, New Haven & Hartford reports that its plan for reducing the number of forest fires on Cape Cod by clearing wide strips along its right of way has met with marked success. This year from May to August inclusive there were only eleven fires attributable to sparks from locomotives and the territory burned over amounted to not more than $6\frac{1}{4}$ acres. In the same period last year there were 150 forest fires which burned over an area estimated at about 2,000 acres. Through

all the wooded parts of Barnstable county a strip varying in width from 60 ft. to 130 ft. has been cleared on either side of the railroad's right of way. Pine trees have been left standing in these strips, as their leaves act as a screen. The areas cleared will be kept in that condition by the section gangs.

The Louisville & Nashville and the Nashville, Chattanooga & St. Louis have entered suits in the United States Court of Claims at Washington for \$184,204 and \$46,739, respectively, sums claimed to be due from the Government for carrying the mails since the parcel post was established. The petitions presented set forth the conditions of the contracts under which the roads carry the mails and allege that by the addition of the parcel post the Government has made an unreasonable addition to the quantity of matter carried in the mail cars and therefore has violated the spirit of the contracts under which the mails are carried.

At the regular monthly meeting of the board of directors of the New York, New Haven & Hartford, held in New York on September 17, the officers were authorized by the board to purchase power from the New York Edison Company. This purchased power, together with that now obtained from the power plant of the New York Central and that of the New Haven at Cos Cob, will enable the road to increase the number of trains operated electrically between New York and New Haven from 37 per cent to 70 per cent of the total. In order to have 100 per cent of electrical operation it will be necessary to purchase additional electrical equipment and additional power for the eastern section of the electric zone between New York and New Haven. At the present time all of the important passenger trains and a number of the important freight trains running between the two cities are hauled by electric locomotives.

Figures recently compiled show that the number of stockholders of the New York, New Haven & Hartford is rapidly increasing under the management of Chairman Elliott in spite of investigations and scandals growing out of acts of the old management. While the average increase from 1901 to 1912 was 1,194, the increase from 1912 to 1913 was 1,162, and from June 30, 1913, to August 31, 1914, was 2,305. The totals, with the number of women stockholders, about 43 per cent, are as follows:

	Total	Women
June 30, 1901.....	9,667	.....
June 30, 1906.....	12,627	.....
June 30, 1912.....	22,806	9,710
June 30, 1913.....	23,968	10,474
August 31, 1914.....	26,373	11,184

Street Car Disaster at Memphis

On the Illinois Central near Memphis, Tenn., on the evening of September 17 an electric car, run into by a freight train at a crossing, was overturned and many persons—reported from 10 to 30—were killed and 10 or more were injured. The wrecked car, a trailer, was thrown down a bank and the foremost freight cars toppled over on it. The motor car drawing the trailer cleared the railway tracks ahead of the engine. The accident occurred at a time when two freight trains were switching over the crossing. The street car conductor, it is said, gave his motorman the signal to go ahead after the first train passed and the car and its trailer were on the crossing when struck by the second train coming from the opposite direction.

A Device Which Records Telephone Messages

The "Telescribe" is an instrument recently perfected by Thomas A. Edison and his staff, capable of reproducing on the wax cylinder of the ordinary dictating machine both sides of an ordinary telephone conversation. The apparatus is in two essential parts; one is an amplifying device which intensifies the

sound from the regular telephone receiver, the latter during the conversation being merely placed in a rest on the amplifier and not electrically or mechanically connected with it, the speaker meanwhile hearing through an additional receiver cut-in on the telescribe. The sounds are then, in reality, telephoned to the other part of the device, a micro-recorder attached to the ordinary dictating machine, and are recorded on the cylinder of the latter to be preserved on the wax or copied in typewritten form as may be desired. The telescribe has not yet been placed on the market, so its possibilities in railway work are yet to be determined.

Air Brake Story Prizes

The judges in the Westinghouse Air Brake Company prize story contest have made their decision, awarding the first prize of \$1,000 to James Cain, engineer of the Wabash Railroad at Peru, Ind. The second prize of \$500 was awarded to H. C. Woodbridge, general manager's special representative, Buffalo, Rochester & Pittsburgh, Rochester, N. Y.; the third prize of \$200 to Alexander M. Stewart, engineer, Illinois Central, McComb, Miss.; the fourth prize of \$150 to D. Oxenford, road foreman of engines, Lehigh Valley, New York City; the fifth prize of \$100 to Carl H. Fuller, chief engineer, Macon Railway & Light Company, Macon, Ga., and the sixth prize of \$50 to Millard F. Cox, assistant superintendent machinery, Louisville & Nashville, Louisville, Ky. Considerably over 300 contributions were entered in this contest, the judges being W. E. Symons, consulting mechanical engineer, Chicago; Willard Smith, editor of the *Railway Review*, Chicago, and Roy V. Wright, managing editor of the *Railway Age Gazette*, New York City.

Foreign Electrification Projects

Among the many large and important engineering improvements which will undoubtedly be seriously delayed because of the war are the electrifications of steam railroads in Germany, France and other countries. The greatest delay may be expected in Germany, partly because of the diversion of government funds to war purposes and partly because of the fact that the latest electrification, that in Silesia, is close to the Russian border. In any event, the railroads will be so overcrowded because of troop and supply transportation that no such interruptions as are incident to a change from steam to electricity would be permitted. It is doubtful also whether the state railway electrification will be furthered in a time of such financial stress.

New York State Barge Canal

The engineers of the western division of the New York Barge Canal are preparing plans for the construction of sections of the canal under six railroad crossings each of Rochester and six west of that city. The work on this part of the canal has been postponed because of litigation as to the right of the State to take the land occupied by the railroads. A recent court decision affirms the right of the State to exercise eminent domain in these cases; but the State must build and maintain the bridges necessary for the crossing of the railroads. State engineer Benschel reports that the terminal facilities for the canal in Rochester, Syracuse, Oswego and other cities will be ready by the time the canal is finished. About 70 per cent of the work on the canal between Buffalo and Albany has been turned over by the contractors to the State.

Old Construction Data

The valuation committee of the Central of New Jersey and Philadelphia & Reading, has sent the following bulletin to all employees and former employees:

In order to co-operate with the Interstate Commerce Commission, under the federal valuation act, in the preparation of an inventory of the properties embraced in the "Central of New Jersey system," representatives of the railroad will accompany the government survey parties to point out the nature, locality, extent and corporate ownership of such properties. In addition to being familiar with the maps, profiles, plans and schedules of the properties, these representatives should have knowledge of all obscure and extraordinary items, quantities and costs that are not readily visible or determinable upon a field inspection.

A few examples of such special features of construction are: Sunken embankments. Old excavations filled up. Trestles and other structures which have been filled with earth embankment. Sink holes. Cuts which were wet during construction and therefore caused extraordinary costs, but which are now dried out. Disintegrated or earth covered rock cuts, which might now be classified as earth at a low price when compared to the original cost of rock excavation. Temporary roads, trestles, tracks, embankments, dams, and other structures required during construction, traces of which have disappeared. Excessively costly foundations of bridges, buildings and other structures. Unsuspected drains and culverts. Conduits, sewers, catch basins, water pipes, dikes, dams, cribbing, retaining walls, flumes, ditches, riprap, mattresses, etc., not readily discovered, and especially those which are outside of the right of way. Roads, channels and streams which have been diverted, but knowledge of which cannot be had from mere inspection. Materials which were originally ballast, but which have settled below the subgrade. Items incident to eliminating grade crossings, elevating, depressing or changing tracks, particularly under traffic, and similar extraordinary construction costs. Penalties paid contractors for delay in furnishing material or facilities. Extra cost of work owing to extraordinary weather and labor conditions, strikes, etc., or on account of suspension and later resumption of the construction. Curbing, paving, drainage, etc., of streets, and other improvements of various kinds off the right of way, paid for wholly or in part by the railroad companies. Special assessments levied against the railroad companies for general public improvements, etc., etc.

It is evident that information concerning such items as these can, in many cases, best be ascertained from: *A personal recollection and knowledge of conditions attendant upon the construction, improvement and operation of the property.* Therefore, in order that a comprehensive investigation and study of the construction records may be made, any person having information of the nature desired is earnestly requested to communicate in regard thereto with

CARL TOMBO,
Principal Assistant Valuation Engineer,
143 Liberty street, New York.

It is important that such communications should give, if possible, the description and location of old field books, maps, profiles, plans, final estimates, vouchers, reports of engineers, "authority for expenditure" reports, and any other records containing information of the nature above described which may be in the general, division or other offices of the company or in the possession of contractors or others who have had connection with the construction, extension and improvement of the road, but who are not now in the employ of the company; also the names and addresses of retired or former officers and employees and others who may have knowledge of the construction, extension and improvement of the property.

The San Francisco Fair

An army of men is now busily engaged in completing the landscaping of the Panama-Pacific International Exposition. The era of construction on the exhibit palaces has passed and the installation of exhibits has begun. Within a few weeks thousands of exhibitors, with their army of attendants, will be installing their displays. Altogether more than 70,000 tons of exhibits will be brought to the grounds, the freight charges on which, it is estimated, will entail an outlay of more than \$4,000,000. The traffic department of the exposition estimates that more than 1,000,000 people will cross the Rocky Mountains to the Pacific coast next year.

Railway Fire Protection Association

The second annual meeting of the Railway Fire Protection Association will be held at the Hotel Raleigh, Washington, D. C., on Tuesday and Wednesday, October 6 and 7. The program for the meeting is as follows:

Tuesday Morning Session 10 A. M.—Roll Call, Reading of Minutes of Last Meeting, Address of President, Report of Executive Committee.

Afternoon Session 2 P. M.—Report of Committee on Fire Hazards.

Wednesday Morning Session 10 A. M.—Report of Committee

on Statistics and Forms, Report of Committee on Fire Fighting Organization.

Afternoon Session 2 P. M.—Report of Committee on Fire Fighting Apparatus, Unfinished Business, New Business, Election of Officers and Executive Committee.

It is announced that if necessary the meeting will be continued on Thursday, October 8.

MEETINGS AND CONVENTIONS

The following list gives names of secretaries, dates of next or regular meetings, and places of meeting.

- AIR BRAKE ASSOCIATION.—F. M. Nellis, 53 State St., Boston, Mass. Next convention, May 4-7, 1915, Hotel Sherman, Chicago.
- AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—A. G. Thomason, Demurrage Commissioner, Boston, Mass. Annual convention in April.
- AMERICAN ASSOCIATION OF DINING CAR SUPERINTENDENTS.—H. C. Boardman, D. L. & W., Hoboken, N. J. Next convention, October 22-24, Washington, D. C.
- AMERICAN ASSOCIATION OF FREIGHT AGENTS.—R. O. Wells, Illinois Central, East St. Louis, Ill. Annual meeting, May 21-24, 1915, Richmond, Va.
- AMERICAN ASSOCIATION OF GENERAL PASSENGER AND TICKET AGENTS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York.
- AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—E. H. Harman, Room 101, Union Station, St. Louis, Mo.
- AMERICAN ELECTRIC RAILWAY ASSOCIATION.—E. B. Burritt, 29 W. 39th St., New York. Annual convention, October 12-16, Atlantic City, N. J.
- AMERICAN ELECTRIC RAILWAY MANUFACTURERS' ASSOCIATION.—H. G. McConaughy, 165 Broadway, New York. Meetings with American Electric Railway Association.
- AMERICAN RAILWAY ASSOCIATION.—W. F. Allen, 75 Church St., New York. Semi-annual meeting, November 18, Chicago.
- AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W., Chicago. Next convention, October 20-22, 1914, Los Angeles, Cal.
- AMERICAN RAILWAY ENGINEERING ASSOCIATION.—E. H. Fritch, 900 S. Michigan Ave., Chicago. Next convention, March 16-18, 1915, Chicago.
- AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—J. W. Taylor, 1112 Karpen Bldg., Chicago. Annual meeting, June, 1915.
- AMERICAN RAILWAY SAFETY ASSOCIATION.—L. F. Shedd, C. R. I. & P., Chicago. Next meeting, November, Chicago.
- AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—A. R. Davis, Central of Georgia, Macon, Ga. Annual meeting, July, 1915.
- AMERICAN SOCIETY FOR TESTING MATERIALS.—Prof. E. Marburg, University of Pennsylvania, Philadelphia, Pa.
- AMERICAN SOCIETY OF CIVIL ENGINEERS.—Chas. W. Hunt, 220 W. 57th St., New York. Regular meetings, 1st and 3d Wednesday in month, except June, July and August, 220 W. 57th St., New York.
- AMERICAN SOCIETY OF ENGINEERING CONTRACTORS.—J. R. Wemlinger, 11 Broadway, New York. Regular meetings, 2d Thursday in month, at 2 P. M., 11 Broadway, New York.
- AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York. Annual meeting, December 1-4, 1914, New York.
- AMERICAN WOOD PRESERVERS' ASSOCIATION.—F. J. Angier, B. & O., Mt. Royal Sta., Baltimore, Md. Next convention, January 19-21, 1915, Chicago.
- ASSOCIATION OF AMERICAN RAILWAY ACCOUNTING OFFICERS.—E. R. Woodson, 1300 Pennsylvania Ave., N. W., Washington, D. C. Annual convention, April 28, 1915, Atlanta, Ga.
- ASSOCIATION OF MANUFACTURERS OF CHILLED CAR WHEELS.—George W. Lyndon, 1214 McCormick Bldg., Chicago. Annual meeting, second Tuesday in October, New York.
- ASSOCIATION OF RAILWAY CLAIM AGENTS.—C. W. Egan, B. & O., Baltimore, Md. Annual meeting, 3d week in May, 1915, Galveston, Tex.
- ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago. Annual convention, October 26-30, 1914, Chicago.
- ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—P. W. Drew, Soo Line, 112 West Adams St., Chicago. Annual meeting, June 22-25, 1915, Rochester, N. Y.
- ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—G. P. Conard, 75 Church St., New York. Next meeting, December 8-9, 1914, Richmond, Va.
- BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—L. D. Mitchell, Detroit Graphite Co., Chicago, Ill. Meetings with American Railway Bridge and Building Association.
- CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk, P. O. Box 7, St. Lambert (near Montreal), Que. Regular meetings, 2d Tuesday in month, except June, July and August, Windsor Hotel, Montreal, Que.
- CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 176 Mansfield St., Montreal, Que. Regular meetings, 1st Thursday in October, November, December, February, March and April. Annual meeting, January, Montreal.
- CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 Lawler Ave., Chicago. Regular meetings, 2d Monday in month, except July and August, Lytton Bldg., Chicago.
- CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York. Regular meetings, 2d Friday in January, May, September and November. Annual meeting, 2d Thursday in March, Hotel Statler, Buffalo, N. Y.
- CIVIL ENGINEERS' SOCIETY OF ST. PAUL.—Edw. J. Dugan, P. O. Box 654, August and September, Old State Capitol Bldg., St. Paul.
- ENGINEERS' SOCIETY OF PENNSYLVANIA.—Edw. R. Dasher, Box 75, Harrisburg, Pa. Regular meetings, 1st Friday after 10th of each month, except July and August, 31 So. Front St., Harrisburg, Pa.
- ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—Elmer K. Hiles, 2511 Oliver Bldg., Pittsburgh, Pa. Regular meetings, 1st and 3d Tuesday, Pittsburgh.
- FREIGHT CLAIM ASSOCIATION.—Warren P. Taylor, R. F. & P., Richmond, Va. Annual meeting, June 16, 1915, Chicago.
- GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 321 Grand Central Station, Chicago. Regular meetings, Wednesday preceding 3d Thursday in month, Room 1856, Transportation Bldg., Chicago.
- INTERNATIONAL RAILWAY CONGRESS.—Executive Committee, 11, Rue de Louvain, Brussels, Belgium. Next convention, June 23 to July 6, 1915, Berlin.
- INTERNATIONAL RAILWAY FUEL ASSOCIATION.—C. G. Hall, C. & E. I., 922 McCormick Bldg., Chicago. Annual meeting, May 17-20, 1915, Chicago.
- INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 829 W. Broadway, Winona, Minn. Next convention, July 14-17, 1915, Sherman House, Chicago.
- INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—A. L. Woodworth, C. H. & D., Lima, Ohio.
- MAINTENANCE OF WAY AND MASTER PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—T. I. Goodwin, C. R. I. & P., Eldon, Mo. Next convention, November 17-19, 1914, Detroit, Mich.
- MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York. Annual convention, May, 1915.
- MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—A. P. Dane, B. & M., Reading, Mass.
- MASTER CAR BUILDERS' ASSOCIATION.—J. W. Taylor, 1112 Karpen Bldg., Chicago. Annual meeting, June, 1915.
- NATIONAL RAILWAY APPLIANCES ASSOCIATION.—Bruce V. Crandall, 537 So. Dearborn St., Chicago. Next convention, March 15-19, 1915, Chicago.
- NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2d Tuesday in month, except June, July, August and September, Boston.
- NEW YORK RAILROAD CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meetings, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.
- NIAGARA FRONTIER CAR MEN'S ASSOCIATION.—E. Frankenberger, 623 Brisbane Bldg., Buffalo, N. Y. Meetings monthly.
- PEORIA ASSOCIATION OF RAILROAD OFFICERS.—M. W. Rotchford, Union Station, Peoria, Ill. Regular meetings, 2d Thursday in month, Jefferson Hotel, Peoria.
- RAILROAD CLUB OF KANSAS CITY.—C. Manlove, 1008 Walnut St., Kansas City, Mo. Regular meetings, 3d Friday in month, Kansas City.
- RAILROAD MASTER TINNERS, COPPERSMITHS AND PIPEFITTERS' ASSOCIATION.—U. G. Thompson, C. & E. I., Danville, Ill. Annual meeting, May, 1915.
- RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 30 Church St., New York. Annual meeting, December 10, 1914, Waldorf-Astoria Hotel, New York.
- RAILWAY CLUB OF PITTSBURGH.—J. B. Anderson, Room 207, P. R. R. Sta., Pittsburgh, Pa. Regular meetings, 4th Friday in month, except June, July and August, Monongahela House, Pittsburgh.
- RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—J. Scribner, 1021 Monadnock Block, Chicago. Meetings with Association of Railway Electrical Engineers.
- RAILWAY FIRE PROTECTION ASSOCIATION.—C. B. Edwards, Fire Ins. Agt., Mobile & Ohio, Mobile, Ala. Annual meeting, October 6-7, 1914, Hotel Raleigh, Washington, D. C.
- RAILWAY SIGNAL ASSOCIATION.—C. C. Rosenberg, Times Bldg., Bethlehem, Pa.
- RAILWAY STOREKEEPERS' ASSOCIATION.—J. P. Murphy, L. S. & M. S., Box C, Collinwood, Ohio. Annual meeting, May, 1915.
- RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 2136 Oliver Bldg., Pittsburgh, Pa. Meetings with Master Car Builders and Master Mechanics Associations.
- RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 50 Church St., New York. Meetings with Association of Railway Telegraph Superintendents.
- RICHMOND RAILROAD CLUB.—F. O. Robinson, C. & O., Richmond, Va. Regular meetings, 2d Monday in month, except June, July and August.
- ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—L. C. Ryan, C. & N. W., Sterling, Ill.
- ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August, St. Louis.
- SALT LAKE CITY TRANSPORTATION CLUB.—R. E. Rowland, Hotel Utah Bldg., Salt Lake City, Utah. Regular meetings, 1st Saturday of each month, Salt Lake City.
- SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, 3868 Park Ave., New York. Meeting with annual convention Railway Signal Association.
- SOCIETY OF RAILWAY FINANCIAL OFFICERS.—Carl Nyquist, C. R. I. & P., La Salle St. Sta., Chicago.
- SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, A. & W. P. Ry., Atlanta, Ga.
- SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Grant Bldg., Atlanta, Ga. Regular meetings, 3d Thursday, January, March, May, July, September, November, 10 A. M., Candler Bldg., Atlanta.
- TOLEDO TRANSPORTATION CLUB.—Harry S. Fox, Toledo, Ohio. Regular meetings, 1st Saturday in month, Boody House, Toledo.
- TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y. Meetings with Roadmasters' and Maintenance of Way Association.
- TRAFFIC CLUB OF CHICAGO.—W. H. Wharton, La Salle Hotel, Chicago.
- TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 291 Broadway, New York. Regular meetings, last Tuesday in month, except June, July and August, Waldorf-Astoria, New York.
- TRAFFIC CLUB OF PITTSBURGH.—D. L. Wells, Erie R. R., Pittsburgh, Pa. Meetings bimonthly, Pittsburgh. Annual meeting, 2d Monday in June.
- TRAFFIC CLUB OF ST. LOUIS.—A. F. Versen, Mercantile Library Bldg., St. Louis, Mo. Annual meeting in November. Noonday meetings October to May.
- TRAIN DESPATCHERS' ASSOCIATION OF AMERICA.—J. F. Mackie, 7122 Stewart Ave., Chicago. Annual meeting June 15, 1915, Minneapolis, Minn.
- TRANSPORTATION CLUB OF DETROIT.—W. R. Hurley, Superintendent's office, L. S. & M. S., Detroit, Mich. Meetings monthly, Normandie Hotel, Detroit.
- TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. & H. R., East Buffalo, N. Y.
- UTAH SOCIETY OF ENGINEERS.—Frank W. Moore, Newhouse Bldg., Salt Lake City, Utah. Regular meetings, 3d Friday in month, except July and August, Consolidated Music Hall, Salt Lake City.
- WESTERN CANADA RAILWAY CLUB.—W. H. Rosevear, P. O. Box 1707, Winnipeg, Man. Regular meetings, 2d Monday, except June, July and August, Winnipeg.
- WESTERN RAILWAY CLUB.—J. W. Taylor, 1112 Karpen Bldg., Chicago. Regular meetings, 3d Tuesday in month, except June, July and August, Karpen Bldg., Chicago.
- WESTERN SOCIETY OF ENGINEERS.—J. H. Warder, 1735 Monadnock Block, Chicago. Regular meetings, 1st Monday in month, except January, July and August, Chicago. Extra meetings, except in July and August, generally on other Monday evenings.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JUNE, 1914

Name of road.	Average mileage operated during period.	Operating revenues				Operating expenses				Net operating revenue (or deficit).	Outside operations, net.	Taxes.	Operating income (or loss).	Increase (or decr.) comp. with last year.
		Freight.	Passenger.	Total.	Maintenance of way and structures, equipment.	Traffic.	Trans- portation.	General.	Total.					
Central Vermont	411	\$350,020	\$86,766	\$436,786	\$46,042	\$8,676	\$156,055	\$6,895	\$294,888	\$166,155	—\$663	\$17,535	\$147,957	\$1,499
Chicago, Burlington & Quincy	9,264	4,979,646	1,877,297	6,856,943	1,337,603	162,861	2,290,079	210,403	5,349,833	2,162,008	6,472	662,970	1,505,509	248,382
Chicago, Indianapolis & Louisville	617	373,762	147,873	521,635	89,478	63,053	214,628	19,141	404,168	167,446	.....	32,665	134,781	40,952
Chicago, Terre Haute & Southeastern	375	152,614	15,646	168,260	20,257	37,601	46,772	9,828	117,419	56,194	—115	11,500	44,579	24,846
TWELVE MONTHS OF FISCAL YEAR ENDING JUNE 30, 1914														
Central Vermont	411	\$2,839,688	\$1,014,414	\$3,854,102	\$603,042	\$785,937	\$2,062,642	\$100,090	\$3,657,577	\$1,592,712	\$7,716	\$192,475	\$2,97,953	—\$359,490
Chicago, Burlington & Quincy	9,264	62,799,188	21,743,507	84,542,695	12,002,628	15,888,686	30,224,524	2,397,888	62,148,398	30,602,536	—140,248	4,016,658	26,445,631	—1,394,914
Chicago, Indianapolis & Louisville	617	4,610,933	1,722,479	6,333,412	1,038,340	1,068,264	2,644,581	202,631	5,184,728	1,759,277	.....	332,990	1,426,287	—161,682
Chicago, Terre Haute & Southeastern	375	1,906,655	202,813	2,109,468	315,928	613,308	693,976	109,577	1,775,928	386,130	—3,147	138,000	244,983	—60,104

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JULY, 1914

Name of road.	Average mileage operated during period.	Operating revenues				Operating expenses				Net operating revenue (or deficit).	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.		
		Freight.	Passenger.	Total.	Maintenance of way and structures, equipment.	Traffic.	Transportation.	Miscellaneous.	General.					Total.	
Hocking Valley	353	\$329,310	\$79,782	\$451,414	\$78,810	\$82,392	\$8,357	\$160,335	.....	\$13,034	\$342,928	\$38,800	\$69,686	—\$134,006
Lehigh & Hudson River	97	127,066	3,999	131,065	19,445	20,088	1,311	51,217	.....	3,748	95,809	4,150	38,643	12,903
Minneapolis & St. Louis	1,646	551,885	182,038	734,748	103,600	124,331	19,228	283,110	\$76	17,026	547,372	237,376	200,536	3,921	
Missouri, Kansas & Texas Lines	3,865	1,744,939	775,851	2,716,700	368,083	407,257	57,339	1,032,539	30,066	88,836	1,973,666	743,034	629,647	13,900	
Missouri Pacific	3,920	1,833,277	476,901	2,517,904	306,699	456,039	56,797	898,145	9,522	60,147	1,787,348	98,590	631,827	117,117	
Mobile & Ohio	1,122	909,338	129,856	1,098,606	127,780	226,265	42,531	408,622	3,330	29,329	837,858	33,245	227,501	—7,336	
New Orleans, Mobile & Chicago	403	138,893	33,159	181,592	34,089	25,345	4,159	56,633	1	7,084	127,311	6,178	48,100	—12,461	
Northwestern Pacific	401	136,248	252,582	428,799	56,932	40,812	4,715	124,855	.....	10,066	232,917	15,985	179,896	—8,963
Oregon Short Line	2,154	1,189,105	452,736	1,781,769	301,515	226,749	29,750	429,536	31,199	53,482	1,056,193	116,500	608,811	—13,007	
Oregon-Washington R. R. & Nav. Co.	1,915	828,183	464,181	1,402,924	137,403	158,681	37,015	433,759	14,798	55,841	835,134	92,948	474,684	84,089	
Pere Marquette	2,322	803,011	432,936	1,378,927	164,148	280,618	34,837	524,083	6,481	49,344	1,058,323	52,967	267,637	161,322	
Philadelphia & Reading	1,020	2,956,057	608,398	3,742,799	416,054	706,858	45,573	1,310,960	10,646	73,140	2,563,231	99,826	1,079,357	—214,854	
Port Reading	21	94,351	94,351	10,467	10,467	38	37,781	1,517	60,029	54,573	12,000	42,573	2,020
St. Joseph & Grand Island	319	155,012	30,087	196,108	31,074	19,031	4,676	59,172	6,233	120,186	75,922	7,048	68,865	30,202
St. Louis & San Francisco	4,746	2,343,197	1,028,885	3,594,094	513,794	616,023	76,196	1,228,499	.....	85,329	2,519,839	117,039	956,570	—243,885
St. Louis, Brownsville & Mexico	548	110,572	73,681	199,577	35,553	24,040	5,266	83,159	.....	10,853	157,524	42,053	35,303	—10,015
St. Louis, Iron Mountain & Southern	3,365	2,002,183	541,500	2,735,067	377,922	480,497	54,570	861,477	10,267	60,283	1,845,015	112,832	777,069	18,578	
St. Louis Southwestern	943	447,073	122,959	603,815	75,761	105,886	26,080	157,601	3,429	22,774	390,961	212,854	183,082	—7,191	
Southern in Mississippi	281	46,402	31,694	86,382	26,711	9,123	2,416	40,860	.....	3,592	82,703	7,750	—4,071	12,361
Spokane, Portland & Seattle	556	242,933	190,412	470,694	55,080	36,303	9,738	97,329	3,890	12,980	215,321	53,400	201,933	18,970	
Texas & Pacific	1,886	970,236	382,034	1,473,202	193,708	258,481	38,714	605,283	14,076	39,764	1,149,969	68,700	254,533	35,693	
Virginia & Southwestern	240	147,199	17,151	169,302	24,179	37,715	2,173	45,962	.....	3,518	113,546	6,250	49,506	5,316
Western Pacific	943	395,089	134,209	561,238	131,880	73,159	25,195	168,067	13,564	24,912	436,777	30,036	93,667	—58,106	

Traffic News

The Western Classification Committee has announced a hearing in Chicago on October 2, on electric fans.

A merchant in Winnipeg, Man., has received a shipment of 26 carloads of apples direct from Nova Scotia.

The semi-annual convention of the Railway Development Association is to be held at the Hotel La Salle, Chicago, on November 10 and 11.

The committee on relations between railroads of the American Railway Association reports that the total freight car surplus on September 15 was 136,049 cars, a decrease of 27,277 cars from September 1. The total shortage was 2,059 cars, an increase of 141.

The Boston & Maine announces that not more than two mileage books will be sold to a single customer. Since the announcement that the cost of mileage books is to be advanced on October 1, traveling men are said to have been buying up large quantities of books at the present rate of two cents a mile.

At a conference last week between representatives of the transcontinental railways and the Interstate Commerce Commission it was decided to extend the agreement covering reparation on shipments affected by the Spokane rate case to cover shipments made to and from intermediate points between Chicago and Spokane, made between July 15, 1912, and August 1, 1913.

The live stock exhibit at the Panama-Pacific International Exposition in San Francisco will last throughout the period of the exposition, from February 20 to December 4, 1915. Competitions in the department of live stock will take place in October and November of next year. In addition to \$175,000 which has been set aside for cash premiums, other sums have been appropriated by interested live stock associations, bringing the total to \$227,000. A like amount is offered in prizes for trotting races.

A remarkable record for regular and fast freight service has been made recently by the fast freight train No. 51 from Chicago to Atlanta, Ga., over the Illinois Central and the Nashville, Chattanooga & St. Louis. The train leaves Chicago at 11 p. m. and is scheduled to arrive at Atlanta at 12:30 a. m. the third day. From August 26 to September 6 its arriving time at Atlanta was 2 a. m., 12:10 a. m., 12:40 a. m., 2 a. m., 1:20 a. m., 12:50 a. m., 1:25 a. m., 5:30 a. m., 6:30 a. m. and 12:50 a. m., and with the exception of only two days the distance of 850 miles was made in 49 to 51 hours.

A preliminary hearing of the Official Classification Committee for the benefit of western shippers was held in the rooms of the Central Freight Association, Chicago, on Thursday, September 17, for the consideration of a large number of subjects enumerated in docket No. 20, including a large number of recommendations of the committee on uniform classification respecting uniform classification provisions and other matters. Among the items on which changes were proposed, based on recommendations of the committee on uniform classification, were acids, boats, boilers, furnaces and heaters, locomotive parts, machinery and machines, oils, ores, clay, coffee, fiber, fish, furniture, honey, rice, rubber goods, sugar cane, fire-fighting apparatus, glassware, and ice making or refrigerating machinery.

The largest cargo of merchandise that ever entered the harbor of San Francisco arrived from China and Japan on the Pacific Mail liner "Manchuria" on September 17 and was sent eastward in bond to New York on five special Southern Pacific trains. The cargo consisted of 270 tons of raw silk and silk pieces, and 2,700 tons of tea, matting and other Oriental merchandise; the total shipment requiring over 165 cars, 15 of which are of an especially constructed design to meet the requirements of the silk. For a week, the Southern Pacific had been obtaining every available car of the highest type of equipment in the neighborhood of San Francisco. These were lined up near the Pacific Mail dock, with several switch engines assigned to the duty of handling them prepara-

tory to the departure of the trains on the transcontinental. Special train and freight handling crews were likewise held in readiness. The Southern Pacific is trying to make San Francisco the main point for the routing of Oriental freight destined to the East. Great Britain has barred the vessels of belligerent nations from the use of the Suez canal, and this means that the great bulk of Oriental merchandise consigned to New York and other eastern points must come to the Pacific Coast, here to be unloaded and re-shipped by rail. In this connection, the Southern Pacific and the Pacific Mail want to make San Francisco the transshipment point.

Traffic Club of New York

The next regular meeting of the Traffic Club of New York will be held at the Waldorf-Astoria on Tuesday evening, September 29. Addresses will be made by Charles S. Whitman, district attorney, on current events, and Alex. C. Humphreys, president of Stevens Institute of Technology on National Economic Conditions.

Illinois Manufacturers' Association for Higher Freight Rates

John M. Glenn, secretary of the Illinois Manufacturers' Association, is quoted as follows:

"The Illinois Manufacturers' Association is in favor of any movement which will mean better business conditions. We opposed former efforts on the part of railroads to obtain higher rates, because we did not believe that conditions in the country warranted the changes and because we would be the ones to suffer.

"We still want to ship our goods just as cheaply as possible, but we want them shipped. Conditions are now such that they cannot always be shipped, partly because there is no market and partly because the railroads cannot afford to supply the needed equipment.

"The railroads are in trouble, and because they are in trouble we are in trouble also. The railroads are the agencies for delivering our goods. There is no sentimental desire on our part to aid the 'poor railroads' for themselves alone, nor are we taking this attitude out of sympathy to the widows and orphans who own the securities. It is simply a business proposition."

American Association of Traveling Passenger Agents

The forty-second annual convention of the American Association of Traveling Passenger Agents is to be held in San Francisco on October 12 and 13. It is expected that this convention will have the largest attendance in the history of the association, as acceptances have already been received from 350 members. Special trains will be run from Chicago over the Chicago & Northwestern, Chicago, Milwaukee & St. Paul, and possibly the Chicago, Rock Island & Pacific, and it is expected that there will be two specials out of St. Louis over the Missouri Pacific. The members will be entertained by the officials of the Panama-Pacific International Exposition and will be afforded an opportunity to inspect the fair grounds and buildings. Following the convention a tour of California will be made. Among the subjects to be discussed at the convention are the following: "Of what value will the Panama-Pacific International Exposition and the opening of the Panama Canal be to the World?" and "Why is the Traveling Passenger Agent of more importance today than he was during the old days of rate cutting?" A special train will be provided by the Atchison, Topeka & Santa Fe for the return trip from San Diego to Chicago.

THE TOWING LOCOMOTIVES ON THE PANAMA CANAL.—Forty three-phase towing locomotives have been built for the Panama Canal, having tractive effort up to 47,500 lb. Four of these, two on each side, will propel steamships through the locks. No vessel is allowed to go through the locks under her own power. Each locomotive is propelled by a rack rail while towing at a speed of two miles per hour; when running idle the rack pinion is released and the speed increased to five miles per hour. The locomotive is driven by two 75 h. p. motors; in the center there is a vertical windlass with drum, the capacity of which is 800 ft. of one-inch steel hawser cable.

Commission and Court News

INTERSTATE COMMERCE COMMISSION

The commission has announced that it will begin hearings on October 19 in relation to the petition of 112 carriers in official classification territory, asking a modification of the recent findings in the Five Per Cent Case.

The New Orleans Cotton Exchange has filed a complaint with the Interstate Commerce Commission against 30 railroads, charging discrimination against New Orleans in favor of other southern and eastern ports in the failure to publish through rates to New Orleans from local cotton-producing points.

The railroads that were defendants in the San Francisco and Los Angeles switching cases, in which the Interstate Commerce Commission issued an order requiring them to cease making and collecting charges for switching cars placed on industrial spur tracks when incidental to the line haul of the delivering carrier, have filed a petition for a rehearing before the Interstate Commerce Commission announcing that they propose to demonstrate that the switching charges imposed by the carriers for transporting freight to and from industries are lawful and reasonable, and that the carriers are entitled to collect charges for performing these services in addition to the rates collected for the main line service. Particular stress is laid upon the decisions in the industrial railways case and on the statement made by the commission in its opinion in the 5 per cent rate advance case. The petition includes the following: "It is therefore respectfully submitted that these defendants should be permitted to introduce evidence in support of their contentions that this industrial switching service is separate and distinct from the main line service; that this service is in the nature of a special and ancillary service for which reasonable charges should properly be made, so that these defendants may conform their practice to the policy approved by the commission, thereby removing the discrimination which will be engendered against the team track shippers and the unjust preference and advantage which will be given industrial shippers if the charges are not imposed; and that, to this end, the cases should be reopened and a rehearing granted."

STATE COMMISSIONS

The New Hampshire Public Service Commission has refused permission to the Boston & Maine and Grand Trunk to increase mileage book rates from 2 to 2¼ cents per mile.

The California Railroad Commission has rendered a decision authorizing the Southern Pacific, Western Pacific and Atchison, Topeka & Santa Fe to make certain increases in their freight rates between San Francisco and Stockton. At the same time, the commission denied the railroads authority to increase their rates between San Francisco, San Jose, Niles, Oakland, Berkeley, San Leandro, Crockett, Benicia, Bay Point, South Vallejo and numerous other points west of Stockton.

The New York State Public Service Commission, Second district, has decided to suspend for another six months, to March 20, 1915, the tariffs filed by the railroads making a charge of \$2 a car for "spotting" cars on private sidings and industrial railroads. Protest was immediately made by large numbers of shippers, and as a result the commission suspended the proposed rates pending a hearing and decision of their necessity. The commission is expected to delay action until the federal commission decides the cases, embodying the same question, which affect New York shippers.

As briefly noted in last week's issue the Missouri railways on September 15, filed with the state public service commission a petition for an increase of passenger fares from two to three cents per mile, and four cents on branch lines. At the same time they asked for a general advance in freight rates, for which they submitted tariffs, and a restoration of the old excess baggage rate, which the commission had reduced from 16⅔ to 12½ per cent of the passenger fare for each 100 lb. The petition was

filed in accordance with the recent decision of the Missouri Supreme Court in the Missouri Southern case, holding that the provision in the public service commission law authorizing the commission to prescribe reasonable rates in effect repealed the maximum rate laws passed by the legislature.

The Maine Public Utilities Commission

The voters of Maine in the referendum held with the recent September election have approved the act of the legislature creating the public utilities commission and the provisions of the act are now effective. Governor William T. Haines is expected to appoint Samuel W. Gould, a former congressman, as the democratic member of the board, succeeding the late Joseph Williamson; and he will name a chairman in the place of Luere B. Deasey, of Bar Harbor, who declined to serve. William B. Skelton, of Lewiston, is the other member of the commission. Mr. Gould's appointment will carry with it a salary of \$4,000 a year. He is one of the leading lawyers of the state and a graduate of the University of Maine, holding the position of president of the board of trustees of that institution at the present time. He has been prominent in democratic politics, having been candidate for governor on that ticket and elected to Congress in 1910. It is understood that George F. Giddings, of Augusta, the present clerk of the state board of railroad commissioners, which is abolished under the new act, is to be appointed clerk of the commission at a salary of \$2,500 a year. This law was passed in 1913 and would have gone into effect on July 12 of that year but for the fact that a petition was presented calling for a referendum. The Statute is Chapter 129 of 1913. The law contains in general all of the stringent and sweeping provisions which have been embodied in recent state statutes of this kind such as Massachusetts and West Virginia. An abstract of it was printed in the *Railway Age Gazette*, July 11, 1913. The salary of the chairman is to be \$5,000 a year and of the other commissioners \$4,500 each. The objectors said that the new law would cost the state \$100,000 a year and that this would be an unnecessary expense, the present state of affairs being satisfactory.

PERSONNEL OF COMMISSIONS

M. E. Wells, who is now engaged on the appraisal of the Pere Marquette for the Michigan Railroad Commission, has been appointed senior inspector of motive power, division of valuation, Interstate Commerce Commission, for the Southern district, with headquarters at Chattanooga, Tenn., effective on October 1.

K. E. Kellenberger, whose appointment as senior signal engineer, central district, division of valuation, Interstate Commerce Commission, was reported in the *Railway Age Gazette* of September 11, was superintendent of signals of the Chicago & North Western, not the Chicago Great Western, as stated.

Frank M. Patterson has been appointed field engineer of the central district, division of valuation, Interstate Commerce Commission, with headquarters at Chicago. Mr. Patterson was educated at the University of Iowa, and has been connected with the Chicago, Burlington & Quincy in various capacities, from 1887 until his recent appointment, having been assistant engineer on construction of the St. Louis terminal; resident engineer in Chicago; resident engineer at Hannibal, Mo.; roadmaster on the Missouri lines; engineer in charge of construction on the Chicago & Alton and Burlington joint line from Mexico to Old Monroe, Mo.; assistant to the engineer of the Illinois district, and later engineer of the Missouri district.

COURT NEWS

Judge John G. Slate, of Jefferson City, Mo., last week overruled the demurrer of the Missouri Pacific to the suit brought by the attorney general of Missouri for the recovery of overcharges in passenger rates while the state two-cent fare law was under injunction, and appointed W. S. Hoke as master in chancery to receive and pass upon all claims for overcharges which may be filed. The ruling sustained the right of the attorney general to sue for the shippers and passengers collectively.

Railway Officers

Executive, Financial, Legal and Accounting

Edward D. Robbins, general counsel to the board of directors of the New York, New Haven & Hartford, with headquarters at New Haven, Conn., has resigned.

C. L. Sivley has resigned as general attorney of the Illinois Central and the Yazoo & Mississippi Valley, at Chicago, Ill., to engage in the general practice of law at Memphis, Tenn.

Farrar L. McCain has resigned as judge of the Superior Court of Muskogee county, Oklahoma, to become general counsel of the Midland Valley Railroad for Oklahoma and Arkansas, with headquarters at Muskogee, Okla.

Frank Scott, vice-president and treasurer of the Grand Trunk and the Grand Trunk Pacific, with headquarters at Montreal, Que., has been appointed vice-president, in charge of finances, also of the Central Vermont, succeeding M. M. Reynolds, deceased.

David Van Alstyne has been appointed assistant to the vice-president in charge of operation of the New York, New Haven & Hartford and the Central New England, with headquarters at New York. Mr. Van Alstyne will have charge of the test and store departments, and of handling scrap; he will also have supervisory authority over the mechanical department in regard to organization, shop practice, approval of design, standards and requisitions.

Operating

W. F. Martin has been appointed inspector of operation of the Erie at Cleveland, O.

John B. Glasgow, night chief despatcher on the Northern Pacific, has been appointed trainmaster at Jamestown, N. D.

M. A. Mulligan, trainmaster of the Lehigh Valley at Jersey City, N. J., has been appointed general yard inspector with office at South Bethlehem, Pa.

C. H. Hinton, formerly agent of the Frisco lines at Newton, Tex., has been appointed superintendent of the Orange & Northwestern, with headquarters at Orange, Tex.

John L. Terry, general manager of the Denver, Laramie & Northwestern at Denver, Colo., has resigned to go to the Rail Joint Company, New York, effective October 1.

Traffic

W. B. Wells has been appointed general agent of the Frisco Lines at Dallas, Tex.

F. P. Jeffries has resigned as general agent of the Chicago & Eastern Illinois at Evansville, Ind.

B. L. Abberger has been appointed soliciting freight agent of the Atlanta, Birmingham & Atlantic, with office at Tampa, Fla.

H. A. Willie has been appointed traveling freight and passenger agent of the Wabash, with headquarters at Salt Lake City, Utah.

H. F. Garrett has been appointed soliciting freight agent of the Queen & Crescent Route, with headquarters at Jacksonville, Fla., succeeding L. F. Malum, resigned.

W. H. Kinard, traveling freight agent of the Georgia Railroad at Macon, Ga., has been promoted to commercial agent, with headquarters at Spartanburg, S. C., and H. A. Ansaldo, soliciting freight agent at Charleston, S. C., succeeds Mr. Kinard.

E. J. Naylor, general agent traffic department of the Chicago & Alton at San Francisco, Cal., has been transferred to Peoria, Ill., in a similar capacity, succeeding E. C. Coffee, deceased, whose title was assistant general freight agent. The latter position has been abolished. Frank Carnahan has been appointed commercial agent at Peoria.

J. R. Shannon, commercial agent of the Minneapolis & St. Louis at Cincinnati, Ohio, has been appointed general agent at Chicago, succeeding E. L. Dalton, resigned to take service with

the Chicago & Alton, and R. N. Golden has been appointed general agent of the traffic department of the Minneapolis & St. Louis, with office at Cincinnati, Ohio.

Samuel Wilson, assistant general freight agent of the Chicago, Milwaukee & St. Paul at Seattle, Wash., has been transferred to Tacoma, Wash., in a similar capacity. R. J. Daniels, commercial agent at Tacoma, has been appointed division freight and passenger agent at Butte, Mont., and the former position has been abolished. A. J. Hillman, whom Mr. Daniels succeeds, has been appointed general agent freight department at Seattle.

George M. Henry, whose appointment as general passenger agent of the Detroit, Toledo & Ironton, with headquarters at Detroit, Mich., has already been announced in these columns, was born September 3, 1876, at Toledo, Ohio. He began railway work in May, 1893, with the Wheeling & Lake Erie at Toledo, and was successively clerk and chief clerk in the passenger department until 1898, when he went to the Detroit & Lima Northern at Detroit, Mich., as chief clerk in the passenger department. From 1900 to 1902 he was general freight and passenger agent of the Rapid Railway, an electric line, and the following two years was general passenger agent of the Detroit Southern. He was then engaged in the coal business at Detroit for one year, returning to railway service in 1905 as general freight and passenger agent of the Detroit, Monroe & Toledo. For three years from 1906 he was in the advertising business, taking up railway work again in 1909 as chief clerk in the passenger department of the Ohio Electric Railway at Springfield, Ohio. Mr. Henry became connected with the Detroit, Toledo & Ironton in 1910 as assistant general passenger agent, and was appointed general passenger agent on August 1.

Engineering and Rolling Stock

William V. Wicks has been appointed road foreman of engines of the Northern Pacific, at Jamestown, N. D.

W. H. Seward has been appointed assistant engineer of the Chicago, Burlington & Quincy, with headquarters at St. Joseph, Mo., succeeding E. H. Peck.

William Schmalzried, foreman of car shops of the Texas & Pacific at Ft. Worth, Tex., has been appointed master car builder, with office at Marshall, Tex., succeeding W. D. Minton, resigned.

Frank L. Fox has been appointed general foreman, car department, of the Pere Marquette, with headquarters at Detroit, Mich. Mr. Fox will have jurisdiction over all matters pertaining to the car department.

George Searle, formerly for seven years general roundhouse foreman of the Atchison, Topeka & Santa Fe, at San Bernardino, Cal., has been appointed master mechanic of the Los Angeles division of the San Pedro, Los Angeles & Salt Lake, with headquarters at Las Vegas, Nev., succeeding W. A. Rogers, resigned.

J. Q. Anderson, roadmaster of the Atlantic Coast Line at Florence, S. C., has been transferred to Petersburg, Va., in a similar capacity. W. M. Funk, roadmaster at Darlington, S. C., has been transferred to Florence, succeeding Mr. Anderson, and B. E. Haley, roadmaster at Kissimmee, Fla., has been transferred to Darlington, succeeding Mr. Funk.

A. G. Trumbull, mechanical superintendent of the Erie at New York, has been appointed assistant to the general mechanical superintendent, with headquarters at New York; E. S. FitzSimmons, mechanical superintendent of the Ohio division, at Cleveland, Ohio, has been appointed mechanical superintendent of the Erie division, with headquarters at New York; Charles James, master mechanic at Jersey City, N. J., succeeds Mr. FitzSimmons; F. H. Murray, master mechanic at Port Jervis, N. Y., succeeds Mr. James; George Thibaut, general foreman at Susquehanna, Pa., succeeds Mr. Murray; T. S. Davey, master mechanic at Stroudsburg, Pa., has been appointed shop superintendent at Buffalo, N. Y., car shop, and W. H. Snyder, general foreman at Stroudsburg, succeeds Mr. Davey.

Purchasing

G. A. Secor, storekeeper of the Minneapolis & St. Louis, at Minneapolis, Minn., has been appointed general storekeeper of the Chicago & Alton, with headquarters at Bloomington, Ill., succeeding Daniel Downing, resigned.

C. M. Wester has been appointed storekeeper of the Baltimore & Ohio, with office at Parkersburg, W. Va., succeeding D. L. Donaldson, transferred, and J. V. Mayhall has been appointed assistant storekeeper, with office at Parkersburg, succeeding W. D. Stone, promoted.

J. H. Sanford, purchasing agent of the New York, New Haven & Hartford, at New Haven, Conn., has been appointed purchasing agent of the Connecticut Company, and will also buy for the Rhode Island Company, the Housatonic Power Company, the Berkshire Street Railway, the New York & Stamford Railway, the Westchester Street Railroad, and the Westport Water Company. Mr. Sanford will have his headquarters at New Haven. In line with the policy the New Haven is now pursuing of curtailing expenses in every way possible, it is thought that H. A. Fabian, director of purchases, can handle the business without Mr. Sanford's assistance. The appointment of an independent purchasing agent for the trolley companies is the last step in giving those companies a complete organization of their own, entirely independent in every way of the New Haven management.

OBITUARY

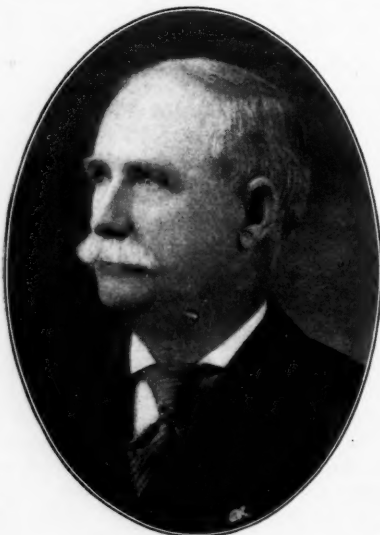
Charles A. Pettibone, general agent of the Wabash at Portland, Ore., died on September 16, aged 53 years.

William S. Crane, formerly car accountant of the Missouri Pacific at St. Louis, Mo., died on September 20, at his home in that city.

John G. Haun, supervisor of bridges and buildings of the Virginia & Southwestern, with headquarters at Bristol, Tenn., was killed in an accident on that road on September 14. A motor car in which he was traveling was derailed while crossing a trestle near Bluff City, causing his death.

J. D. M. Hamilton, claims attorney of the Atchison, Topeka & Santa Fe, with headquarters at Topeka, Kan., died at a hospital in Kansas City on September 20. He was born on July 18, 1851 at Pittsburgh, Pa., and was educated at Knox College and at the St. Louis law school. From 1879 to 1898 he was local attorney for the Chicago, Burlington & Quincy at Fort Madison, Iowa, and was for a time mayor of the city. From 1881 to 1890 he was also attorney for the Fort Madison & Northwestern. He entered the service of the Santa Fe as assistant attorney and in June 1898 was made claims attorney. He has been a leader in the safety first movement.

Frank W. Chaffee, general car inspector of the New York Central & Hudson River, with headquarters at Albany, N. Y., died on September 15. He was born on December 17, 1850, at Springfield, Mass., and began railway work in 1868, as car repairer on the Connecticut River Railroad, now a part of the Boston & Maine. From September, 1870, to December, 1872, he was with the Wason Car Manufacturing Company, and then to June, 1881, was in the car building department of the Boston & Albany. He was then for three years in the service of the Baltimore & Ohio at Camden station, Baltimore, and on June 1, 1884, left that company to go to the New York Central & Hudson River as general foreman of the West Albany, N. Y., shops. He remained in that position until March, 1895, when he was promoted to master car builder at the same shops, and since February 1, 1901, Mr. Chaffee was general car inspector of the same road.



F. W. Chaffee

Equipment and Supplies

LOCOMOTIVE BUILDING

THE ATCHISON, TOPEKA & SANTA FE has ordered one locomotive for exhibition purposes from the Baldwin Locomotive Works.

THE SOUTHERN PACIFIC has ordered one Mikado type locomotive for exhibition purposes from the Baldwin Locomotive Works.

THE REED CONSTRUCTION COMPANY, Mishawaka, Ind., has ordered one Shay geared locomotive from the Lima Locomotive Corporation.

CAR BUILDING

THE GEORGIA RAILROAD is in the market for 500 40-ton box cars.

THE NEW YORK CENTRAL & HUDSON RIVER has ordered 2,000 underframes from the Merchants Despatch Transportation Company.

THE NASHVILLE, CHATTANOOGA & ST. LOUIS is in the market for 500 to 1,000 40-ton single sheathed box cars, or 500 to 1,000 40-ton double sheathed box cars.

THE NORTHWESTERN PACIFIC reported in the *Railway Age Gazette* of August 14, as being in the market for 11 coaches, 3 mail and express, 4 baggage, 3 smoking and 4 chair cars has ordered 25 all-steel passenger cars from the Pullman Company.

THE CINCINNATI, HAMILTON & DAYTON is in the market for 12 all-steel coaches, 8 all-steel passenger and baggage cars, 4 all-steel baggage and mail cars, 5 all-steel baggage cars, one dining car and 2 wrecking cranes. The same company is also planning to build 105 caboose cars in its own shops.

IRON AND STEEL

THE PADUCAH & ILLINOIS has ordered 137 tons of steel in form of I-beams and girders for use at Paducah, Ky., from the American Bridge Company.

THE CHICAGO, ROCK ISLAND & PACIFIC has ordered 600 tons of material for a highway bridge at Des Moines, Iowa, from the American Bridge Company.

THE LOUISIANA RAILWAY & NAVIGATION COMPANY has ordered 215 tons of steel for a bridge over Tunica Bayou, La., from the American Bridge Company.

SIGNALING

The Texas & Pacific is installing automatic block signals on its line between Addis, La., and Donaldsonville, 24 miles.

FUEL ECONOMY ON THE EGYPTIAN RAILWAYS.—When the news was received at Cairo that a general European war had broken out the various railway administrations at once took steps to examine their supplies of coal. The results were satisfactory as far as the amounts on hand were concerned, but in view of the uncertainty of the future all the companies began to cut down their service. The Egyptian State Railways led the way with a diminished time-table which came into effect on August 7. Four of the Cairo-Alexandria expresses—two each way—have been withdrawn, also the night service in each direction between those places, and six of the main line trains on the Upper Egypt section. Thirty trains a day on the Cairo (Port Limoun)-Mataria suburban line have been taken off, thereby reducing that service by one-third. In order further to save the coal bill, all lights at the Cairo main station are being put out at 8 p. m., while many stations are not being lit at all.

Supply Trade News

R. L. Brown was elected a director and vice-president of the M-C-B Company, Chicago, at a special meeting of the board of directors.

John L. Terry, general manager of the Denver, Laramie & Northwestern, has resigned from that position, effective October 1, to become connected with the Denver office of the Rail Joint Company, New York.

The Ogle Construction Company, Chicago, has been awarded a contract for the erection of a 340-ton all-steel balanced bucket type coaling station at Hollow Rock Junction, Tenn., by the Nashville, Chattanooga & St. Louis.

The U. S. Metal & Manufacturing Company, New York, has been appointed resident purchasing agent in America for the following companies: Underground Electric Railways of London, Ltd., the London General Omnibus Company, Ltd., the Metropolitan District Railway, the London Electric Railway, the Central London Railway and the City & South London Railway.

TRADE PUBLICATIONS

SOUTHERN PACIFIC.—The passenger department has issued a folder on San Francisco, describing the principal points of interest of the city and of the Panama-Pacific exposition to be held next year.

SECTIONAL BUILDINGS.—The Chicago Pneumatic Tool Company, Chicago, general sales agents for the Ruby Manufacturing Company, Jackson, Mich., has recently issued a bulletin descriptive of Ruby all-steel sectional buildings for railroad purposes.

PACIFIC TYPE LOCOMOTIVES.—The Baldwin Locomotive Works, Philadelphia, Pa., has recently published its record No. 79, which describes and gives dimensions of the recent Pacific type locomotives which have been built by this company. The booklet is well illustrated.

SAND BLASTING.—The De La Vergne Machine Company, Mott Sand Blasting Department, New York, has issued in pamphlet form a paper read by H. D. Gates, sales manager, at a recent meeting of the Associated Foundry Foremen of New York and vicinity, entitled "The Sand Blast from the Users' Viewpoint."

PNEUMATIC TOOLS.—The Independent Pneumatic Tool Company has just issued circular V, descriptive of the lines of Thor roller bearing piston air drills, pneumatic chipping, calking and flue beading hammers, turbine drills, staybolt drivers, air hose and couplings manufactured by that company. This circular will be sent free on request.

AUTOMATIC TRAIN STOP.—The Automatic Railroad Appliance Company, Inc., Rochester, N. Y., has issued an 18-page pamphlet descriptive of the Lawn-Ryan automatic train stop for steam and electric roads. Illustrations of the mechanism are shown, and the description, with references to these illustrations, explains the method of operation and installation.

FURNACE HEATS.—The W. S. Rockwell Company, New York, has issued a card, 9 by 11 inches in size, on which is printed a comparative scale of Fahrenheit and Centigrade degrees and tables of temperature conversion factors, and hardening and tempering heats. The card is meant to be hung in laboratory or furnace rooms and to be used in connection with heating operations.

APPLIANCES FOR BURNING FUEL OIL.—Tate, Jones & Company, Inc., Pittsburgh, Pa., have recently issued a catalogue having this title which aims to show the reasons why oil is the most economical fuel and to name all and illustrate some of the types of furnaces and industries in which oil burners can be used to advantage. The first part of the catalogue in addition, illustrates and describes various types of oil burners produced by the company. The second part likewise describes and illustrates the company's systems for pumping, heating and regulating oil flow to burners.

Railway Construction

ALBERTA CENTRAL.—See Canadian Pacific.

ALTUS, LUBBOCK & ROSWELL.—Announcement has been made that work on the section from Memphis, Tex., southwest to Lubbock, 86 miles, will be pushed to completion and will probably be put in operation this year. This work was started in 1911. The plans call for building an extension from Lubbock west to Roswell, N. M. An extension is also projected east to Altus, Okla. E. Kennedy, president, Houston, Tex.

CANADIAN PACIFIC.—The Alberta Central is now open for traffic from Red Deer, Alta., west to Rocky Mountain house, 64.8 miles. The new route from Montreal, Que., via Glen Tay, Trenton and Agincourt, to Toronto, 182.6 miles, is now known as the Lake Ontario Shore Line. This new line has ruling gradients of only 0.4 per cent each way and the maximum curvature is 4 deg.

FLORENCE & HUNTSVILLE INTERURBAN.—An officer writes that the plans call for building from Florence, Ala., east to Huntsville, about 75 miles, and about 12 miles of spur lines. A branch is also projected from Killen, northeast via Lexington to Pulaski, Tenn. Surveys are to be started at once on the line. The same interests have organized the Allentown Power Company to develop the water power on Cypress creek and to build two hydro-electric power plants. Surveys have already been made of the various water powers, and the plans for dams and power stations are now being prepared. T. H. Allen, president, and M. S. Bingham, chief engineer, Florence, of the railway company.

MARBLE CREEK VALLEY (Electric).—Incorporated in Idaho with \$100,000 to build an electric line from Clarkia, Idaho, northeast to Pocono, about 20 miles, also to build a line south to a point in Clearwater county. F. Herrick, Lac du Flambeau, Wis., may be addressed.

NEW YORK SUBWAYS.—The New York Public Service Commission, First district, opened bids on September 15 for the construction of Section No. 2 of Route No. 48, the William street part of the Park place, William and Clark street subway. This section begins at a point under Beekman street, in the borough of Manhattan, about 62 ft. west of William street, curves thence southerly under private property into William street and runs southerly under William street and easterly under Hanover Square to a point about opposite the easterly building line of Pearl street. The contract has been let to Smith, Hauser & McIsaac, Inc., the lowest bidder, who offered to do the work for \$2,254,670. (August 28, p. 408.)

The New York Public Service Commission, First district, has approved a contract made by the New York Municipal Railway Corporation with the Empire Construction Company, the lowest bidder, at \$115,987, for the installation of tracks and line equipment on the Liberty avenue extension of the elevated railroad in the borough of Brooklyn and on the elevated connection between the Lutheran Cemetery line and the Myrtle avenue elevated railroad.

NORTH GEORGIA MINERAL.—Application has been made for a charter in Georgia by this company with \$1,250,000 capital, and office at Atlanta. The plans call for building from Atlanta, Ga., northwest through Fulton, Cobb, Cherokee and Bartow counties, about 50 miles. The incorporators include J. Spalding, J. Morris, D. Macdougald, A. E. Thornton, H. Spalding, W. J. Morrison and J. S. Floyd.

ROCKY FORD & SOUTHWESTERN.—Plans have been made, it is said, to build a line from Rocky Ford, Ga., which is on the Central of Georgia and the Sylvania & Girard southwest to Portal about 12 miles. Henry B. Griffin, formerly of Hamlet, N. C., is said to be interested.

ROSTON, GRAND RAPIDS & PROTECTION.—We are told that this company, which was recently organized in Oklahoma, has a survey finished on ten miles. It is thought that money can be raised locally to build the line from a point on the Wichita

Falls & Northwestern at or near Rosston, Okla., east to Doby Springs. The line may eventually be extended further east. L. A. Walton, president, Alva, Okla. (September 11, p. 494.)

TAMPA & GULF COAST.—This company has completed work, it is said, on the extension from Clearwater south along the west coast of Florida to Davista, thence east to St. Petersburg, 22 miles. (July 24, p. 190.)

VERDE TUNNEL & SMELTER RAILROAD.—An officer writes that this company has finished work on a line from Clarksdale, Ariz., on the Atchison, Topeka & Santa Fe, to Hopewell tunnel of the Verde Copper Company's mine, 14 miles. T. C. Snider was the contractor. The ruling grade on the line is 4 per cent, and the maximum curvature 24 deg. The line was built to carry ore from the mines of the Verde Copper Company to the new smelter just erected at Clarksdale. W. L. Clark, president, Jerome, Ariz., N. E. Bailey, general superintendent, and R. D. Perkins, consulting engineer, Los Angeles, Cal.

RAILWAY STRUCTURES

GREENVILLE, ALA.—Plans for a viaduct to be built on Commerce street in Greenville have been submitted by the Louisville & Nashville to the city officers of Greenville. The proposed structure is to be of steel, concrete and stone construction.

LEBANON, TENN.—An officer of the Nashville, Chattanooga & St. Louis writes that work is now under way by the company's forces putting up a passenger station 116 ft. long, to cost \$14,412, also a freight house 125 ft. long to cost \$17,896, on Gay street in Lebanon. The structures are to have wood frames with stuccoed walls.

PHILADELPHIA, PA.—Plans are being made for a steel and concrete bridge to be built on the line of Glenwood avenue, near Seventh street, Philadelphia, over the tracks of the Richmond branch of the Philadelphia & Reading. It is understood that contracts will soon be let for the work which is to be carried out to eliminate a dangerous grade crossing. The cost of the improvements will be about \$40,000.

RICHMOND, VA.—The Southern Railway has given a contract to P. J. White & Son, Richmond, Va., for the construction of a yard office at South Richmond, and a contract to J. H. Campbell & Brother, Richmond, for the installation of a steam heating system in the new freight house at Richmond.

THE NIGERIAN RAILWAYS IN 1913.—The report for the year 1913 of the Nigerian Railways shows that, while the receipts increased from \$2,440,530 in 1912 to \$3,461,096 in 1913, the expenses only rose from \$1,717,056 to \$1,867,780, so that the ratio of expenses to receipts was but 53.97 per cent in 1913, as against 75.52 per cent in 1912. The growth of traffic has been so great that additional rolling stock has had to be obtained from English equipment companies. Tenders were also asked for locomotives, but the orders for these had to be sent to this country because British makers were unable to promise early delivery.

DIESEL ELECTRIC MOTOR COACHES INTRODUCED IN GERMAN STATE.—The Saxon State Railways have had constructed two Diesel electric motor coaches, which they propose to try on the line between Dresden, Coswig, and Meissen, for passenger traffic. The Diesel motor is of the six-cylinder type and develops 200 to 250 horsepower at 400 to 450 revolutions per minute. Coupled direct with the motor is a direct current dynamo of about 190 horsepower, which supplies energy to the motors, of which there are two, each wound for 300 volts. The car is on two trucks, one of which has three axles and the other two axles. The Diesel motor and the dynamo are carried on the three-axle truck and the working motors on the two-axle one. At each end of the car are third class compartments with accommodation for ninety passengers, as well as cabs for the driver. The car weighs about 70 tons. It is able to run at a speed of 43.4 miles per hour on the level, or to haul a trailer at a lower speed. The car is fitted with the Westinghouse two-cylinder air brake. For electric lighting a battery is provided, charged from the dynamo. The Diesel motor cylinders are water-cooled, the heated water being discharged in summer, but in winter passed through tubes to heat the car.

Railway Financial News

BALTIMORE & OHIO.—Felix M. Warburg has been elected a director, succeeding Paul M. Warburg, resigned to become a member of the federal reserve board.

CHICAGO, ROCK ISLAND & PACIFIC.—The joint committee, of which James N. Wallace is chairman and the members are James Brown, Bernard M. Baruch, Henry Evans and Frederick Strauss, announces that about \$18,000,000 of the Railroad collateral trust bonds have been deposited in this country and \$7,000,000 in Holland, with a committee which is co-operating with the Wallace committee, and that the trustee for the bonds has brought proceedings for the foreclosure and sale of the collateral. The committee says that no distribution of the pledged stock to bondholders is possible except through purchase under foreclosure. The committee is engaged in the preparation of a plan to buy at foreclosure sale this Railway company stock. The committee says in conclusion:

"The committee desires to make it perfectly plain to the bondholders that such a plan will require for its successful carrying out the concurrence of practically all the bondholders, who on the acquisition and distribution pursuant to the plan, of the pledged stock, will, as stockholders, be entitled to full voting rights and to take action as they may deem best, for future financing. The plan above referred to is under preparation and its formal announcement may be expected next week."

ERIE.—J. P. Morgan & Co., New York, are offering to exchange one-year 5 per cent notes at 97½ for the \$4,550,000 notes maturing October 1. The new notes will be secured by \$7,000,000 first mortgage bonds and will be ready for delivery October 1.

INTERNATIONAL & GREAT NORTHERN.—The committee which asked for the deposit of the \$11,000,000 3-year 5 per cent notes which fell due on August 1 announces that a large majority of the notes have been deposited and that further deposits will be accepted to October 22.

KANSAS CITY, MEXICO & ORIENT.—Application has been made to the Texas railroad commission for authority to issue \$1,458,000 bonds on the new completed line between Alpine and Girvin. This is at the rate of \$16,000 per mile.

SAN ANTONIO, UVALDE & GULF.—The receiver has asked permission from the court to issue \$145,000 receiver's certificates for improvements.

TAXI-CABS POPULAR IN INDIA.—It is said that taxi-cabs have proven so popular in Colombo and Calcutta that in the latter city every man and woman who manages to save enough to buy a second-hand motor "that has some pretensions to style" will hire it out; and times are indeed dull when a car fails to bring the owner a clear profit of 300 rupees (\$100) a month.

SWEDISH-DANISH POWER CABLE.—An interesting project is at present under execution by which Sweden will be able to sell to Denmark a considerable part of the electric energy obtainable from her numerous waterfalls. The Sound, which divides the two countries, is only 3½ miles in width at its narrowest point, and the electric power cable crossing it at this point has just been completed and will shortly come into use. According to the project, current produced at the Swedish power stations will be transmitted by overhead cable at a pressure of 50,000 volts, to Helsingborg, where it will be transformed to 25,000 volts and transmitted by an underground cable three miles long to the Swedish coast. The submarine cable above mentioned will convey the current across to the Danish coast and this current will then be transmitted by an underground cable one mile long to Helsingör (Elsinore), where it will again be transformed to 50,000 volts. From Helsingör the current will be carried to Copenhagen by overhead connections. For the most part the cable rests on the bottom of the sea, except at the coast at each end, where it is embedded in the earth.